

SEQUENCE LISTING

<110> Kawasaki, Hiroaki
Graybiel, Ann
Housman, David

<120> Genes Integrating Signal Transduction Pathways

<130> MIT-103

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<150> US 60/105,507

<151> 1998-10-23

<150> US 60/108,685

<151> 1998-11-16

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<170> PatentIn Ver. 2.0

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<222> (166)..(1989)

<223> CalDAG-GEFI

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gctctgagag tgtaacttgg gtctagccca ctggcaccgg cagcc atg gcg agc act 177
                                     Met Ala Ser Thr
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ctg gac ctg gac aag ggt tgc acc gtg gag gag ctg ctc cgt ggc tgt 225
Leu Asp Leu Asp Lys Gly Cys Thr Val Glu Glu Leu Leu Arg Gly Cys
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atc gaa gcc ttt gat gac tct gga aag gtg cga gat cca cag cta gtg 273
Ile Glu Ala Phe Asp Asp Ser Gly Lys Val Arg Asp Pro Gln Leu Val
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cgc atg ttt ctc atg atg cac ccc tgg tac ata cct tcc tct cag ctg 321
Arg Met Phe Leu Met Met His Pro Trp Tyr Ile Pro Ser Ser Gln Leu
40 45 50

gct tcg aaa ctg ctc cac ttc tat cag caa tcc cgg aag gac aac tcc 369
Ala Ser Lys Leu Leu His Phe Tyr Gln Gln Ser Arg Lys Asp Asn Ser
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aat tcc cta cag gtg aaa acc tgt cac ctg gtc agg tac tgg gtc tca 417
Asn Ser Leu Gln Val Lys Thr Cys His Leu Val Arg Tyr Trp Val Ser
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gcc ttc cca gca gag ttc gac ttg aac cca gag ctg gct gaa ccg atc 465
Ala Phe Pro Ala Glu Phe Asp Leu Asn Pro Glu Leu Ala Glu Pro Ile
85 90 95 100

aag gag ctg aag gct ctg tta gac caa gaa gga aac cgc agg cac agc 513
Lys Glu Leu Lys Ala Leu Leu Asp Gln Glu Gly Asn Arg Arg His Ser
105 110 115

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| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| agc | ctc | atc | gac | atc | gag | agt | gtc | ccc | acc | tac | aag | tgg | aag | cgg | cag | 561 |
| Ser | Leu | Ile | Asp | Ile | Glu | Ser | Val | Pro | Thr | Tyr | Lys | Trp | Lys | Arg | Gln | |
| | | | 120 | | | | | 125 | | | | | 130 | | | |
| gtg | acc | cag | cgg | aac | cct | gtg | gaa | cag | aaa | aag | cgc | aag | atg | tcc | ctg | 609 |
| Val | Thr | Gln | Arg | Asn | Pro | Val | Glu | Gln | Lys | Lys | Arg | Lys | Met | Ser | Leu | |
| | | | 135 | | | | 140 | | | | | 145 | | | | |
| ttg | ttt | gat | cac | ttg | gag | cct | atg | gaa | ctg | gca | gaa | cat | ctc | acc | tac | 657 |
| Leu | Phe | Asp | His | Leu | Glu | Pro | Met | Glu | Leu | Ala | Glu | His | Leu | Thr | Tyr | |
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| ttg | gag | tat | cgg | tcc | ttc | tgc | aag | atc | ctg | ttc | cag | gac | tat | cac | agc | 705 |
| Leu | Glu | Tyr | Arg | Ser | Phe | Cys | Lys | Ile | Leu | Phe | Gln | Asp | Tyr | His | Ser | |
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| Phe | Val | Thr | His | Gly | Cys | Thr | Val | Asp | Asn | Pro | Val | Leu | Glu | Arg | Phe | |
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| atc | tcc | ctc | ttc | aac | agt | gtc | tct | cag | tgg | gtc | caa | ctc | atg | atc | ctc | 801 |
| Ile | Ser | Leu | Phe | Asn | Ser | Val | Ser | Gln | Trp | Val | Gln | Leu | Met | Ile | Leu | |
| | | | 200 | | | | | 205 | | | | | 210 | | | |
| agc | aag | ccc | aca | gcc | acg | cag | cgg | gcg | ctg | gtc | atc | aca | cat | ttc | gtg | 849 |
| Ser | Lys | Pro | Thr | Ala | Thr | Gln | Arg | Ala | Leu | Val | Ile | Thr | His | Phe | Val | |
| | | | 215 | | | | 220 | | | | | 225 | | | | |
| cat | gtg | gca | gag | aag | ctg | ctg | cag | ctg | cag | aac | ttc | aac | acg | ttg | atg | 897 |
| His | Val | Ala | Glu | Lys | Leu | Leu | Gln | Leu | Gln | Asn | Phe | Asn | Thr | Leu | Met | |
| | | | 230 | | | 235 | | | | | 240 | | | | | |
| gcc | gtc | gtg | gga | ggc | ctg | agc | cac | agc | tcc | atc | tca | cgc | ctc | aag | gag | 945 |
| Ala | Val | Val | Gly | Gly | Leu | Ser | His | Ser | Ser | Ile | Ser | Arg | Leu | Lys | Glu | |
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| acc | cac | agc | cat | gtc | agc | cct | gac | acc | atc | aag | ctc | tgg | gaa | ggg | ctg | 993 |
| Thr | His | Ser | His | Val | Ser | Pro | Asp | Thr | Ile | Lys | Leu | Trp | Glu | Gly | Leu | |
| | | | | 265 | | | | | 270 | | | | | 275 | | |
| aca | gaa | cta | gtg | aca | gct | act | ggc | aac | tac | agc | aac | tac | cgg | cga | agg | 1041 |
| Thr | Glu | Leu | Val | Thr | Ala | Thr | Gly | Asn | Tyr | Ser | Asn | Tyr | Arg | Arg | Arg | |
| | | | | 280 | | | | 285 | | | | | 290 | | | |
| ctg | gcg | gcc | tgc | gtg | ggc | ttc | cgc | ttt | cct | atc | ctg | ggg | gtg | cac | ctc | 1089 |
| Leu | Ala | Ala | Cys | Val | Gly | Phe | Arg | Phe | Pro | Ile | Leu | Gly | Val | His | Leu | |
| | | | 295 | | | | 300 | | | | | 305 | | | | |
| aag | gat | cta | gtg | gct | ctg | cag | ctg | gct | ctg | cct | gac | tgg | ctg | gac | cca | 1137 |
| Lys | Asp | Leu | Val | Ala | Leu | Gln | Leu | Ala | Leu | Pro | Asp | Trp | Leu | Asp | Pro | |
| | | | 310 | | | 315 | | | | | 320 | | | | | |
| ggg | cgg | acc | cgg | ctc | aat | gga | gcc | aag | atg | agg | cag | ctt | ttc | agc | att | 1185 |
| Gly | Arg | Thr | Arg | Leu | Asn | Gly | Ala | Lys | Met | Arg | Gln | Leu | Phe | Ser | Ile | |
| | | | | | 330 | | | | | 335 | | | | | 340 | |
| ctg | gag | gag | ttg | gct | atg | gtg | acc | agt | ctt | cga | cca | cca | gtg | caa | gcc | 1233 |
| Leu | Glu | Glu | Leu | Ala | Met | Val | Thr | Ser | Leu | Arg | Pro | Pro | Val | Gln | Ala | |
| | | | | 345 | | | | | 350 | | | | | 355 | | |
| aac | ccc | gac | ctg | ctg | agt | ctg | ctc | acg | gtg | tcc | ctg | gac | cag | tat | cag | 1281 |
| Asn | Pro | Asp | Leu | Leu | Ser | Leu | Leu | Thr | Val | Ser | Leu | Asp | Gln | Tyr | Gln | |
| | | | 360 | | | | | 365 | | | | | 370 | | | |
| acg | gag | gat | gag | ctg | tat | cag | ctc | tct | ctg | cag | cga | gag | cca | cgt | tcc | 1329 |
| Thr | Glu | Asp | Glu | Leu | Tyr | Gln | Leu | Ser | Leu | Gln | Arg | Glu | Pro | Arg | Ser | |
| | | | 375 | | | | 380 | | | | | 385 | | | | |

| | |
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| aag tca tcg ccc acc agc ccc acc agc tgc acc ccg cct ccc cgg ccg | 1377 |
| Lys Ser 390 Pro Thr Ser 395 Thr Ser Cys Thr 400 Pro Pro Arg Pro | |
| cct gtg ctg gaa gag tgg acc tca gtt gcc aag cct aag ctg gac caa | 1425 |
| Pro Val Leu Glu Glu Trp 410 Thr Ser Val Ala Lys 415 Pro Lys Leu Asp Gln 420 | |
| gcc ttg gtg gcc gag cac att gag aag atg gtg gag tct gtg ttc cgg | 1473 |
| Ala Leu Val Ala Glu 425 His Ile Glu Lys 430 Met Val Glu Ser Val Phe Arg 435 | |
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| Asn Phe Asp Val 440 Asp Gly Asp Gly His 445 Ile Ser Gln Glu Phe Gln 450 | |
| atc atc cgg ggc aac ttc cct tat ctc agc gcc ttt ggg gac ttg gac | 1569 |
| Ile Ile Arg 455 Gly Asn Phe Pro Tyr 460 Leu Ser Ala Phe Gly Asp Leu Asp 465 | |
| cag aac cag gat ggc tgc atc agc cgg gag gag atg att tcc tac ttc | 1617 |
| Gln Asn Gln Asp Gly Cys 475 Ile Ser Arg Glu Glu Met 480 Ile Ser Tyr Phe 480 | |
| ctg cgc tcc agc tcc gtg ctg gga ggc cgc atg ggc ttc gta cac aac | 1665 |
| Leu Arg Ser Ser Ser Val Leu Gly Gly Arg Met 495 Gly Phe Val His Asn 500 | |
| ttc cag gag agt aac tcg cta agg ccg gtc gcc tgc cga cac tgc aaa | 1713 |
| Phe Gln Glu Ser Asn 505 Ser Leu Arg Pro Val 510 Ala Cys Arg His Cys Lys 515 | |
| gct ctg atc ctg ggc atc tac aag cag ggc ctc aaa tgt aga gct tgt | 1761 |
| Ala Leu Ile Leu Gly Ile Tyr Lys 525 Gln Gly Leu Lys Cys Arg 530 Ala Cys 530 | |
| ggt gtg aac tgc cac aag cag tgc aaa gac cga ctg tca gtg gaa tgt | 1809 |
| Gly Val Asn Cys His Lys Gln Cys Lys Asp Arg Leu Ser Val Glu Cys 545 | |
| cgc cgc cgc gcc cag agt gtg agc ctg gag ggc tct gca ccc tct ccc | 1857 |
| Arg Arg Arg Ala Gln Ser Val Ser Leu Glu Gly Ser 560 Ala Pro Ser Pro 560 | |
| tca ccc aca cat acc cac cat cgg gcc ttc agc ttc tcc ctg cct cgc | 1905 |
| Ser Pro Thr His Thr His His Arg Ala Phe Ser 575 Phe Ser Leu Pro Arg 580 | |
| cca ggc agg cgc agc tct cgg cct cca gag atc cgt gaa gag gag gtg | 1953 |
| Pro Gly Arg Arg Ser Ser Arg Pro Pro Glu Ile Arg Glu Glu Glu Val 595 | |
| cag act gtg gaa gat ggt gtg ttc gac atc cac tta taagacgctg | 1999 |
| Gln Thr Val Glu Asp Gly Val Phe Asp 605 Ile His Leu 605 | |
| tgactatcaa ggactcattc ctgccttggg gaaaagactt ggagcagagc agggagccag | 2059 |
| ggattctggg gcaggagggtt ggggctgaag gtgggggaag ttgaagggtg catgcaactga | 2119 |
| aaaaaaggcc agggctgggtg tccctaagggt tgtacagact tctgtgaata tttgtatttt | 2179 |
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| aaaaaaaaa a | 2250 |

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35 40 45
Ser Ser Gln Leu Ala Ser Lys Leu Leu His Phe Tyr Gln Gln Ser Arg
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Lys Asp Asn Ser Asn Ser Leu Gln Val Lys Thr Cys His Leu Val Arg
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Tyr Trp Val Ser Ala Phe Pro Ala Glu Phe Asp Leu Asn Pro Glu Leu
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Ala Glu Pro Ile Lys Glu Leu Lys Ala Leu Leu Asp Gln Glu Gly Asn
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Arg Arg His Ser Ser Leu Ile Asp Ile Glu Ser Val Pro Thr Tyr Lys
115 120 125
Trp Lys Arg Gln Val Thr Gln Arg Asn Pro Val Glu Gln Lys Lys Arg
130 135 140
Lys Met Ser Leu Leu Phe Asp His Leu Glu Pro Met Glu Leu Ala Glu
145 150 155 160
His Leu Thr Tyr Leu Glu Tyr Arg Ser Phe Cys Lys Ile Leu Phe Gln
165 170 175
Asp Tyr His Ser Phe Val Thr His Gly Cys Thr Val Asp Asn Pro Val
180 185 190
Leu Glu Arg Phe Ile Ser Leu Phe Asn Ser Val Ser Gln Trp Val Gln
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Leu Met Ile Leu Ser Lys Pro Thr Ala Thr Gln Arg Ala Leu Val Ile
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Thr His Phe Val His Val Ala Glu Lys Leu Leu Gln Leu Gln Asn Phe
225 230 235 240
Asn Thr Leu Met Ala Val Val Gly Gly Leu Ser His Ser Ser Ile Ser
245 250 255
Arg Leu Lys Glu Thr His Ser His Val Ser Pro Asp Thr Ile Lys Leu
260 265 270
Trp Glu Gly Leu Thr Glu Leu Val Thr Ala Thr Gly Asn Tyr Ser Asn
275 280 285
Tyr Arg Arg Arg Leu Ala Ala Cys Val Gly Phe Arg Phe Pro Ile Leu
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Gly Val His Leu Lys Asp Leu Val Ala Leu Gln Leu Ala Leu Pro Asp
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Trp Leu Asp Pro Gly Arg Thr Arg Leu Asn Gly Ala Lys Met Arg Gln
325 330 335
Leu Phe Ser Ile Leu Glu Glu Leu Ala Met Val Thr Ser Leu Arg Pro
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Pro Val Gln Ala Asn Pro Asp Leu Leu Ser Leu Leu Thr Val Ser Leu
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Asp Gln Tyr Gln Thr Glu Asp Glu Leu Tyr Gln Leu Ser Leu Gln Arg
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Glu Pro Arg Ser Lys Ser Ser Pro Thr Ser Pro Thr Ser Cys Thr Pro
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Pro Pro Arg Pro Pro Val Leu Glu Glu Trp Thr Ser Val Ala Lys Pro
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Ser Val Phe Arg Asn Phe Asp Val Asp Gly Asp Gly His Ile Ser Gln
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Gly Asp Leu Asp Gln Asn Gln Asp Gly Cys Ile Ser Arg Glu Glu Met
465 470 475 480

Ile Ser Tyr Phe Leu Arg Ser Ser Ser Val Leu Gly Gly Arg Met Gly
485 490 495

Phe Val His Asn Phe Gln Glu Ser Asn Ser Leu Arg Pro Val Ala Cys
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Arg His Cys Lys Ala Leu Ile Leu Gly Ile Tyr Lys Gln Gly Leu Lys
515 520 525

Cys Arg Ala Cys Gly Val Asn Cys His Lys Gln Cys Lys Asp Arg Leu
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Ser Val Glu Cys Arg Arg Arg Ala Gln Ser Val Ser Leu Glu Gly Ser
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Ala Pro Ser Pro Ser Pro Thr His Thr His His Arg Ala Phe Ser Phe
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Met Ala Gly Thr Leu
1 5

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gac | ctg | gac | aag | ggc | tgc | acg | gtg | gag | gag | ctg | ctc | cgc | ggg | tgc | atc | 223 |
| Asp | Leu | Asp | Lys | Gly | Cys | Thr | Val | Glu | Glu | Leu | Leu | Arg | Gly | Cys | Ile | |
| | | | | 10 | | | | 15 | | | | | | 20 | | |
| gaa | gcc | ttc | gat | gac | tcc | ggg | aag | gtg | cgg | gac | ccg | cag | ctg | gtg | cgc | 271 |
| Glu | Ala | Phe | Asp | Asp | Ser | Gly | Lys | Val | Arg | Asp | Pro | Gln | Leu | Val | Arg | |
| | | | 25 | | | | | 30 | | | | | 35 | | | |
| atg | ttc | ctc | atg | atg | cac | ccc | tgg | tac | atc | ccc | tcc | tct | cag | ctg | gcg | 319 |
| Met | Phe | Leu | Met | Met | His | Pro | Trp | Tyr | Ile | Pro | Ser | Ser | Gln | Leu | Ala | |
| | | 40 | | | | | 45 | | | | | 50 | | | | |
| gcc | aag | ctg | ctc | cac | atc | tac | caa | caa | tcc | cgg | aag | gac | aac | tcc | aat | 367 |
| Ala | Lys | Leu | Leu | His | Ile | Tyr | Gln | Gln | Ser | Arg | Lys | Asp | Asn | Ser | Asn | |
| | 55 | | | | | 60 | | | | | 65 | | | | | |
| tcc | ctg | cag | gtg | aaa | acg | tgc | cac | ctg | gtc | agg | tac | tgg | atc | tcc | gcc | 415 |
| Ser | Leu | Gln | Val | Lys | Thr | Cys | His | Leu | Val | Arg | Tyr | Trp | Ile | Ser | Ala | |
| | 70 | | | | 75 | | | | | 80 | | | | | 85 | |
| ttc | cca | gcg | gag | ttt | gac | ttg | aac | ccg | gag | ttg | gct | gag | cag | atc | aag | 463 |
| Phe | Pro | Ala | Glu | Phe | Asp | Leu | Asn | Pro | Glu | Leu | Ala | Glu | Gln | Ile | Lys | |
| | | | | 90 | | | | | 95 | | | | | 100 | | |
| gag | ctg | aag | gct | ctg | cta | gac | caa | gaa | ggg | aac | cga | cgg | cac | agc | agc | 511 |
| Glu | Leu | Lys | Ala | Leu | Leu | Asp | Gln | Glu | Gly | Asn | Arg | Arg | His | Ser | Ser | |
| | | | 105 | | | | | 110 | | | | | 115 | | | |
| cta | atc | gac | ata | gac | agc | gtc | cct | acc | tac | aag | tgg | aag | cgg | cag | gtg | 559 |
| Leu | Ile | Asp | Ile | Asp | Ser | Val | Pro | Thr | Tyr | Lys | Trp | Lys | Arg | Gln | Val | |
| | | 120 | | | | | 125 | | | | | 130 | | | | |
| act | cag | cgg | aac | cct | gtg | gga | cag | aaa | aag | cgc | aag | atg | tcc | ctg | ttg | 607 |
| Thr | Gln | Arg | Asn | Pro | Val | Gly | Gln | Lys | Lys | Arg | Lys | Met | Ser | Leu | Leu | |
| | 135 | | | | | 140 | | | | | 145 | | | | | |
| ttt | gac | cac | ctg | gag | ccc | atg | gag | ctg | gcg | gag | cat | ctc | acc | tac | ttg | 655 |
| Phe | Asp | His | Leu | Glu | Pro | Met | Glu | Leu | Ala | Glu | His | Leu | Thr | Tyr | Leu | |
| | 150 | | | | 155 | | | | | 160 | | | | | 165 | |
| gag | tat | cgc | tcc | ttc | tgc | aag | atc | ctg | ttt | cag | gac | tat | cac | agt | ttc | 703 |
| Glu | Tyr | Arg | Ser | Phe | Cys | Lys | Ile | Leu | Phe | Gln | Asp | Tyr | His | Ser | Phe | |
| | | | | 170 | | | | | 175 | | | | | 180 | | |
| gtg | act | cat | ggc | tgc | act | gtg | gac | aac | ccc | gtc | ctg | gag | cgg | ttc | atc | 751 |
| Val | Thr | His | Gly | Cys | Thr | Val | Asp | Asn | Pro | Val | Leu | Glu | Arg | Phe | Ile | |
| | | | 185 | | | | | 190 | | | | | 195 | | | |
| tcc | ctc | ttc | aac | agc | gtc | tca | cag | tgg | gtg | cag | ctc | atg | atc | ctc | agc | 799 |
| Ser | Leu | Phe | Asn | Ser | Val | Ser | Gln | Trp | Val | Gln | Leu | Met | Ile | Leu | Ser | |
| | | 200 | | | | | 205 | | | | | 210 | | | | |
| aaa | ccc | aca | gcc | ccg | cag | cgg | gcc | ctg | gtc | atc | aca | cac | ttt | gtc | cac | 847 |
| Lys | Pro | Thr | Ala | Pro | Gln | Arg | Ala | Leu | Val | Ile | Thr | His | Phe | Val | His | |
| | 215 | | | | | 220 | | | | | 225 | | | | | |
| gtg | gcg | gag | aag | ctg | cta | cag | ctg | cag | aac | ttc | aac | acg | ctg | atg | gca | 895 |
| Val | Ala | Glu | Lys | Leu | Leu | Gln | Leu | Gln | Asn | Phe | Asn | Thr | Leu | Met | Ala | |
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| gtg | gtc | ggg | ggc | ctg | agc | cac | agc | tcc | atc | tcc | cgc | ctc | aag | gag | acc | 943 |
| Val | Val | Gly | Gly | Leu | Ser | His | Ser | Ser | Ile | Ser | Arg | Leu | Lys | Glu | Thr | |
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| cac | agc | cac | ggt | agc | cct | gag | acc | atc | aag | ctc | tgg | gag | ggt | ctc | acg | 991 |
| His | Ser | His | Val | Ser | Pro | Glu | Thr | Ile | Lys | Leu | Trp | Glu | Gly | Leu | Thr | |
| | | | 265 | | | | | 270 | | | | | 275 | | | |
| gaa | cta | gtg | acg | gcg | aca | ggc | aac | tat | ggc | aac | tac | cgg | cgt | cgg | ctg | 1039 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Glu | Leu | Val | Thr | Ala | Thr | Gly | Asn | Tyr | Gly | Asn | Tyr | Arg | Arg | Arg | Leu | |
| | | 280 | | | | | 285 | | | | | 290 | | | | |
| gca | gcc | tgt | gtg | ggc | ttc | cgc | ttc | ccg | atc | ctg | ggt | gtg | cac | ctc | aag | 1087 |
| Ala | Ala | Cys | Val | Gly | Phe | Arg | Phe | Pro | Ile | Leu | Gly | Val | His | Leu | Lys | |
| | 295 | | | | | 300 | | | | | 305 | | | | | |
| gac | ctg | gtg | gcc | ctg | cag | ctg | gca | ctg | cct | gac | tgg | ctg | gac | cca | gcc | 1135 |
| Asp | Leu | Val | Ala | Leu | Gln | Leu | Ala | Leu | Pro | Asp | Trp | Leu | Asp | Pro | Ala | |
| 310 | | | | | 315 | | | | | 320 | | | | | 325 | |
| cgg | acc | cgg | ctc | aac | ggg | gcc | aag | atg | aag | cag | ctc | ttt | agc | atc | ctg | 1183 |
| Arg | Thr | Arg | Leu | Asn | Gly | Ala | Lys | Met | Lys | Gln | Leu | Phe | Ser | Ile | Leu | |
| | | | | 330 | | | | | 335 | | | | | 340 | | |
| gag | gag | ctg | gcc | atg | gtg | acc | agc | ctg | cgg | cca | cca | gta | cag | gcc | aac | 1231 |
| Glu | Glu | Leu | Ala | Met | Val | Thr | Ser | Leu | Arg | Pro | Pro | Val | Gln | Ala | Asn | |
| | | | 345 | | | | | 350 | | | | | 355 | | | |
| ccc | gac | ctg | ctg | agc | ctg | ctc | acg | gtg | tct | ctg | gat | cag | tat | cag | acg | 1279 |
| Pro | Asp | Leu | Leu | Ser | Leu | Leu | Thr | Val | Ser | Leu | Asp | Gln | Tyr | Gln | Thr | |
| | | 360 | | | | | 365 | | | | | 370 | | | | |
| gag | gat | gag | ctg | tac | cag | ctg | tcc | ctg | cag | cgg | gag | ccg | cgc | tcc | aag | 1327 |
| Glu | Asp | Glu | Leu | Tyr | Gln | Leu | Ser | Leu | Gln | Arg | Glu | Pro | Arg | Ser | Lys | |
| | 375 | | | | | 380 | | | | | 385 | | | | | |
| tct | tcg | cca | acc | agc | ccc | acg | agt | tgc | acc | cca | cca | ccc | cgg | ccc | ccg | 1375 |
| Ser | Ser | Pro | Thr | Ser | Pro | Thr | Ser | Cys | Thr | Pro | Pro | Pro | Arg | Pro | Pro | |
| 390 | | | | | 395 | | | | | 400 | | | | | 405 | |
| gta | ttg | gag | gag | tgg | acc | tcg | gct | gcc | aaa | ccc | aag | ctg | gat | cag | gcc | 1423 |
| Val | Leu | Glu | Glu | Trp | Thr | Ser | Ala | Ala | Lys | Pro | Lys | Leu | Asp | Gln | Ala | |
| | | | | 410 | | | | | 415 | | | | | 420 | | |
| ctc | gtg | gtg | gag | cac | atc | gag | aag | atg | gtg | gag | tct | gtg | ttc | cgg | aac | 1471 |
| Leu | Val | Val | Glu | His | Ile | Glu | Lys | Met | Val | Glu | Ser | Val | Phe | Arg | Asn | |
| | | | 425 | | | | | 430 | | | | | 435 | | | |
| ttt | gac | gtc | gat | ggg | gat | ggc | cac | atc | tca | cag | gaa | gaa | ttc | cag | atc | 1519 |
| Phe | Asp | Val | Asp | Gly | Asp | Gly | His | Ile | Ser | Gln | Glu | Glu | Phe | Gln | Ile | |
| | | 440 | | | | | 445 | | | | | 450 | | | | |
| atc | cgt | ggg | aac | ttc | cct | tac | ctc | agc | gcc | ttt | ggg | gac | ctc | gac | cag | 1567 |
| Ile | Arg | Gly | Asn | Phe | Pro | Tyr | Leu | Ser | Ala | Phe | Gly | Asp | Leu | Asp | Gln | |
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| aac | cag | gat | ggc | tgc | atc | agc | agg | gag | gag | atg | ggt | tcc | tat | ttc | ctg | 1615 |
| Asn | Gln | Asp | Gly | Cys | Ile | Ser | Arg | Glu | Glu | Met | Val | Ser | Tyr | Phe | Leu | |
| 470 | | | | | 475 | | | | | 480 | | | | | 485 | |
| cgc | tcc | agc | tct | gtg | ttg | ggg | ggg | cgc | atg | ggc | ttc | gta | cac | aac | ttc | 1663 |
| Arg | Ser | Ser | Ser | Val | Leu | Gly | Gly | Arg | Met | Gly | Phe | Val | His | Asn | Phe | |
| | | | | 490 | | | | | 495 | | | | | 500 | | |
| cag | gag | agc | aac | tcc | ttg | cgc | ccc | gtc | gcc | tgc | cgc | cac | tgc | aaa | gcc | 1711 |
| Gln | Glu | Ser | Asn | Ser | Leu | Arg | Pro | Val | Ala | Cys | Arg | His | Cys | Lys | Ala | |
| | | | 505 | | | | | 510 | | | | | 515 | | | |
| ctg | atc | ctg | ggc | atc | tac | aag | cag | ggc | ctc | aaa | tgc | cga | gcc | tgt | gga | 1759 |
| Leu | Ile | Leu | Gly | Ile | Tyr | Lys | Gln | Gly | Leu | Lys | Cys | Arg | Ala | Cys | Gly | |
| | | 520 | | | | | 525 | | | | | 530 | | | | |
| gtg | aac | tgc | cac | aag | cag | tgc | aag | gat | cgc | ctg | tca | ggt | gag | tgt | cgg | 1807 |
| Val | Asn | Cys | His | Lys | Gln | Cys | Lys | Asp | Arg | Leu | Ser | Val | Glu | Cys | Arg | |
| | 535 | | | | | 540 | | | | | 545 | | | | | |
| cgc | agg | gcc | cag | agt | gtg | agc | ctg | gag | ggg | tct | gca | ccc | tca | ccc | tca | 1855 |
| Arg | Arg | Ala | Gln | Ser | Val | Ser | Leu | Glu | Gly | Ser | Ala | Pro | Ser | Pro | Ser | |

| 550 | 555 | 560 | 565 | |
|---|-----|-----|-----|------|
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| Pro Met His Ser His His His Arg Ala Phe Ser Phe Ser Leu Pro Arg | | | | |
| cct ggc agg cga ggc tcc agg cct cca gag atc cgt gag gag gag gta | 585 | 590 | 595 | 1951 |
| Pro Gly Arg Arg Gly Ser Arg Pro Pro Glu Ile Arg Glu Glu Glu Val | | | | |
| cag acg gtg gag gat ggg gtg ttt gac atc cac ttg taatagatgc | 600 | 605 | | 1997 |
| Gln Thr Val Glu Asp Gly Val Phe Asp Ile His Leu | | | | |
| tgtggttgga tcaaggactc attcctgcct tggagaaaaat acttcaacca gagcagggag 2057 | | | | |
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| tgagggcagg gccagggctg gtgtccctaa gggtgtacag actcttgtga atatttgtat 2177 | | | | |
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| Met Ala Gly Thr Leu Asp Leu Asp Lys Gly Cys Thr Val Glu Glu Leu | 1 | 5 | 10 | 15 |
| Leu Arg Gly Cys Ile Glu Ala Phe Asp Asp Ser Gly Lys Val Arg Asp | 20 | 25 | 30 | |
| Pro Gln Leu Val Arg Met Phe Leu Met Met His Pro Trp Tyr Ile Pro | 35 | 40 | 45 | |
| Ser Ser Gln Leu Ala Ala Lys Leu Leu His Ile Tyr Gln Gln Ser Arg | 50 | 55 | 60 | |
| Lys Asp Asn Ser Asn Ser Leu Gln Val Lys Thr Cys His Leu Val Arg | 65 | 70 | 75 | 80 |
| Tyr Trp Ile Ser Ala Phe Pro Ala Glu Phe Asp Leu Asn Pro Glu Leu | 85 | 90 | 95 | |
| Ala Glu Gln Ile Lys Glu Leu Lys Ala Leu Leu Asp Gln Glu Gly Asn | 100 | 105 | 110 | |
| Arg Arg His Ser Ser Leu Ile Asp Ile Asp Ser Val Pro Thr Tyr Lys | 115 | 120 | 125 | |
| Trp Lys Arg Gln Val Thr Gln Arg Asn Pro Val Gly Gln Lys Lys Arg | 130 | 135 | 140 | |
| Lys Met Ser Leu Leu Phe Asp His Leu Glu Pro Met Glu Leu Ala Glu | 145 | 150 | 155 | 160 |
| His Leu Thr Tyr Leu Glu Tyr Arg Ser Phe Cys Lys Ile Leu Phe Gln | 165 | 170 | 175 | |
| Asp Tyr His Ser Phe Val Thr His Gly Cys Thr Val Asp Asn Pro Val | 180 | 185 | 190 | |
| Leu Glu Arg Phe Ile Ser Leu Phe Asn Ser Val Ser Gln Trp Val Gln | 195 | 200 | 205 | |
| Leu Met Ile Leu Ser Lys Pro Thr Ala Pro Gln Arg Ala Leu Val Ile | | | | |

| 210 | | | | 215 | | | | 220 | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Thr 225 | His | Phe | Val | His 230 | Val | Ala | Glu | Lys | Leu | Leu 235 | Gln | Leu | Gln | Asn | Phe 240 |
| Asn | Thr | Leu | Met | Ala 245 | Val | Val | Gly | Gly | Leu 250 | Ser | His | Ser | Ser | Ile 255 | Ser |
| Arg | Leu | Lys | Glu 260 | Thr | His | Ser | His | Val 265 | Ser | Pro | Glu | Thr | Ile 270 | Lys | Leu |
| Trp | Glu | Gly 275 | Leu | Thr | Glu | Leu | Val 280 | Thr | Ala | Thr | Gly | Asn 285 | Tyr | Gly | Asn |
| Tyr | Arg 290 | Arg | Arg | Leu | Ala | Ala 295 | Cys | Val | Gly | Phe | Arg 300 | Phe | Pro | Ile | Leu |
| Gly 305 | Val | His | Leu | Lys | Asp 310 | Leu | Val | Ala | Leu | Gln 315 | Leu | Ala | Leu | Pro | Asp 320 |
| Trp | Leu | Asp | Pro | Ala 325 | Arg | Thr | Arg | Leu | Asn 330 | Gly | Ala | Lys | Met | Lys 335 | Gln |
| Leu | Phe | Ser | Ile 340 | Leu | Glu | Glu | Leu | Ala 345 | Met | Val | Thr | Ser | Leu 350 | Arg | Pro |
| Pro | Val | Gln 355 | Ala | Asn | Pro | Asp | Leu 360 | Leu | Ser | Leu | Leu | Thr 365 | Val | Ser | Leu |
| Asp | Gln 370 | Tyr | Gln | Thr | Glu | Asp 375 | Glu | Leu | Tyr | Gln | Leu 380 | Ser | Leu | Gln | Arg |
| Glu 385 | Pro | Arg | Ser | Lys | Ser 390 | Ser | Pro | Thr | Ser | Pro 395 | Thr | Ser | Cys | Thr | Pro 400 |
| Pro | Pro | Arg | Pro | Pro 405 | Val | Leu | Glu | Glu | Trp 410 | Thr | Ser | Ala | Ala | Lys 415 | Pro |
| Lys | Leu | Asp | Gln 420 | Ala | Leu | Val | Val | Glu 425 | His | Ile | Glu | Lys | Met 430 | Val | Glu |
| Ser | Val | Phe 435 | Arg | Asn | Phe | Asp | Val 440 | Asp | Gly | Asp | Gly | His 445 | Ile | Ser | Gln |
| Glu | Glu 450 | Phe | Gln | Ile | Ile | Arg 455 | Gly | Asn | Phe | Pro | Tyr 460 | Leu | Ser | Ala | Phe |
| Gly 465 | Asp | Leu | Asp | Gln | Asn 470 | Gln | Asp | Gly | Cys | Ile 475 | Ser | Arg | Glu | Glu | Met 480 |
| Val | Ser | Tyr | Phe 485 | Leu | Arg | Ser | Ser | Ser | Val 490 | Leu | Gly | Gly | Arg | Met 495 | Gly |
| Phe | Val | His | Asn 500 | Phe | Gln | Glu | Ser | Asn 505 | Ser | Leu | Arg | Pro | Val 510 | Ala | Cys |
| Arg | His | Cys 515 | Lys | Ala | Leu | Ile | Leu 520 | Gly | Ile | Tyr | Lys | Gln 525 | Gly | Leu | Lys |
| Cys | Arg 530 | Ala | Cys | Gly | Val | Asn 535 | Cys | His | Lys | Gln | Cys 540 | Lys | Asp | Arg | Leu |
| Ser 545 | Val | Glu | Cys | Arg | Arg 550 | Arg | Ala | Gln | Ser | Val 555 | Ser | Leu | Glu | Gly | Ser 560 |
| Ala | Pro | Ser | Pro | Ser 565 | Pro | Met | His | Ser 570 | His | His | His | Arg | Ala | Phe 575 | Ser |
| Phe | Ser | Leu | Pro | Arg | Pro | Gly | Arg | Arg | Gly | Ser | Arg | Pro | Pro | Glu | Ile |

580 585 590

Arg Glu Glu Glu Val Gln Thr Val Glu Asp Gly Val Phe Asp Ile His

595 600 605

Leu

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| | | | Met | Gly | Thr | Leu | Gly | Lys | Ala | Arg | Glu | | | | | | |
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| gct | ccg | cgg | aaa | cct | tgc | cat | ggc | tcc | aga | gct | ggc | ccc | aaa | gga | aga | 219 | |
| Ala | Pro | Arg | Lys | Pro | Cys | His | Gly | Ser | Arg | Ala | Gly | Pro | Lys | Gly | Arg | | |
| 10 | | | | 15 | | | | | | 20 | | | | | 25 | | |
| cta | gag | gcc | aaa | tca | acc | aac | agt | cct | ctc | cct | gcc | cag | ccc | agc | ttg | 267 | |
| Leu | Glu | Ala | Lys | Ser | Thr | Asn | Ser | Pro | Leu | Pro | Ala | Gln | Pro | Ser | Leu | | |
| | | | | 30 | | | | | 35 | | | | | 40 | | | |
| gcc | cag | atc | acc | cag | ttc | cga | atg | atg | gtg | tcc | ctg | gga | cat | ctg | gcc | 315 | |
| Ala | Gln | Ile | Thr | Gln | Phe | Arg | Met | Met | Val | Ser | Leu | Gly | His | Leu | Ala | | |
| | | | 45 | | | | | 50 | | | | | 55 | | | | |
| aaa | gga | gcc | agc | ctg | gat | gat | ctt | att | gac | agc | tgc | att | caa | tct | ttc | 363 | |
| Lys | Gly | Ala | Ser | Leu | Asp | Asp | Leu | Ile | Asp | Ser | Cys | Ile | Gln | Ser | Phe | | |
| | | 60 | | | | | 65 | | | | | 70 | | | | | |
| gat | gca | gat | gga | aac | ctg | tgt | cga | agt | aac | cag | ctg | tta | caa | gtc | atg | 411 | |
| Asp | Ala | Asp | Gly | Asn | Leu | Cys | Arg | Ser | Asn | Gln | Leu | Leu | Gln | Val | Met | | |
| | 75 | | | | | 80 | | | | | 85 | | | | | | |
| cta | acc | atg | cac | cga | atc | atc | atc | tcc | tcg | gcc | gag | ctg | ctg | caa | aaa | 459 | |
| Leu | Thr | Met | His | Arg | Ile | Ile | Ile | Ser | Ser | Ala | Glu | Leu | Leu | Gln | Lys | | |
| 90 | | | | | 95 | | | | | 100 | | | | | 105 | | |
| ctc | atg | aat | cta | tat | aag | gac | gcc | ctg | gaa | aag | aat | tct | cca | gga | att | 507 | |
| Leu | Met | Asn | Leu | Tyr | Lys | Asp | Ala | Leu | Glu | Lys | Asn | Ser | Pro | Gly | Ile | | |
| | | | | 110 | | | | | 115 | | | | | 120 | | | |
| tgc | ttg | aag | atc | tgc | tat | ttt | gtc | agg | tat | tgg | ata | aca | gaa | ttc | tgg | 555 | |
| Cys | Leu | Lys | Ile | Cys | Tyr | Phe | Val | Arg | Tyr | Trp | Ile | Thr | Glu | Phe | Trp | | |
| | | | 125 | | | | | 130 | | | | | 135 | | | | |
| atc | atg | ttc | aaa | atg | gat | gcc | agc | ttg | acc | agc | acc | atg | gaa | gag | ttt | 603 | |
| Ile | Met | Phe | Lys | Met | Asp | Ala | Ser | Leu | Thr | Ser | Thr | Met | Glu | Glu | Phe | | |
| | | 140 | | | | | 145 | | | | | 150 | | | | | |
| cag | gac | ctg | gtg | aaa | gcc | aat | ggg | gag | gag | tcc | cac | tgc | cac | ctc | atc | 651 | |
| Gln | Asp | Leu | Val | Lys | Ala | Asn | Gly | Glu | Glu | Ser | His | Cys | His | Leu | Ile | | |
| | 155 | | | | | 160 | | | | | 165 | | | | | | |
| gac | acg | aca | caa | att | aat | tct | cga | gac | tgg | tcc | agg | aaa | ctg | act | caq | 699 | |

| | | | | | | | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------|
| Asp 170 | Thr | Thr | Gln | Ile | Asn 175 | Ser | Arg | Asp | Trp | Ser 180 | Arg | Lys | Leu | Thr | Gln 185 | |
| agg | ata | aaa | tca | aat | acc | agc | aag | aag | cgg | aaa | gtg | tcc | ctg | ctg | ttt | 747 |
| Arg | Ile | Lys | Ser | Asn 190 | Thr | Ser | Lys | Lys | Arg 195 | Lys | Val | Ser | Leu | Leu 200 | Phe | |
| gac | cat | ctt | gaa | cct | gaa | gaa | ctg | tct | gaa | cac | ctc | acc | tac | ctt | gag | 795 |
| Asp | His | Leu | Glu 205 | Pro | Glu | Glu | Leu | Ser 210 | Glu | His | Leu | Thr | Tyr 215 | Leu | Glu | |
| ttc | aag | tcc | ttc | cga | cgg | ata | tct | ttc | tct | gat | tat | cag | aat | tac | ctt | 843 |
| Phe | Lys | Ser 220 | Phe | Arg | Arg | Ile | Ser 225 | Phe | Ser | Asp | Tyr | Gln 230 | Asn | Tyr | Leu | |
| gta | aac | agc | tgc | gta | aag | gag | aac | ccc | acc | atg | gag | cgg | tcc | att | gcc | 891 |
| Val | Asn 235 | Ser | Cys | Val | Lys | Glu 240 | Asn | Pro | Thr | Met | Glu 245 | Arg | Ser | Ile | Ala | |
| ctg | tgc | aat | ggc | atc | tcc | cag | tgg | gta | caa | ctg | atg | gtt | ctc | agc | cgt | 939 |
| Leu | Cys | Asn | Gly | Ile | Ser 255 | Gln | Trp | Val | Gln | Leu 260 | Met | Val | Leu | Ser | Arg 265 | |
| ccc | acc | cca | cag | ctc | cgg | gca | gag | gtc | ttc | atc | aag | ttc | atc | cat | gtg | 987 |
| Pro | Thr | Pro | Gln | Leu 270 | Arg | Ala | Glu | Val | Phe 275 | Ile | Lys | Phe | Ile | His 280 | Val | |
| gct | cag | aag | ctc | cac | cag | cta | cag | aac | ttc | aac | acg | cta | atg | gct | gtg | 1035 |
| Ala | Gln | Lys | Leu 285 | His | Gln | Leu | Gln | Asn 290 | Phe | Asn | Thr | Leu | Met 295 | Ala | Val | |
| atc | ggg | gga | ctg | tgt | cac | agc | tcc | atc | tcc | agg | ctc | aag | gag | aca | agt | 1083 |
| Ile | Gly | Gly 300 | Leu | Cys | His | Ser | Ser 305 | Ile | Ser | Arg | Leu | Lys 310 | Glu | Thr | Ser | |
| tca | cat | gtc | cca | cat | gag | atc | aat | aag | gtt | ctg | ggt | gag | atg | act | gaa | 1131 |
| Ser | His 315 | Val | Pro | His | Glu | Ile 320 | Asn | Lys | Val | Leu | Gly 325 | Glu | Met | Thr | Glu | |
| ctg | ctg | tcc | tcc | tgc | aga | aac | tat | gac | aac | tac | agg | cga | gcc | tat | ggt | 1179 |
| Leu | Leu | Ser | Ser | Cys | Arg 335 | Asn | Tyr | Asp | Asn | Tyr 340 | Arg | Arg | Ala | Tyr | Gly 345 | |
| gag | tgc | acc | cac | ttc | aaa | atc | ccc | ata | ctg | ggt | gtg | cac | ctc | aag | gac | 1227 |
| Glu | Cys | Thr | His | Phe 350 | Lys | Ile | Pro | Ile | Leu 355 | Gly | Val | His | Leu | Lys 360 | Asp | |
| ctc | ata | tcc | cta | tat | gaa | gcc | atg | cct | gac | tac | ctg | gaa | gac | ggg | aag | 1275 |
| Leu | Ile | Ser | Leu 365 | Tyr | Glu | Ala | Met | Pro 370 | Asp | Tyr | Leu | Glu | Asp 375 | Gly | Lys | |
| gtg | aat | gtc | caa | aag | ctc | ctg | gcc | ctt | tac | aat | cac | atc | aat | gag | ttg | 1323 |
| Val | Asn | Val 380 | Gln | Lys | Leu | Leu | Ala 385 | Leu | Tyr | Asn | His | Ile 390 | Asn | Glu | Leu | |
| gtc | cag | ctg | cag | gac | gtg | gcc | cca | cca | ttg | gat | gcc | aac | aag | gac | ctg | 1371 |
| Val | Gln 395 | Leu | Gln | Asp | Val | Ala 400 | Pro | Pro | Leu | Asp | Ala 405 | Asn | Lys | Asp | Leu | |
| gtg | cac | ctg | ctg | acg | tta | tcc | ctg | gat | cta | tac | tac | acc | gaa | gat | gaa | 1419 |
| Val | His | Leu | Leu | Thr | Leu 415 | Ser | Leu | Asp | Leu | Tyr 420 | Tyr | Thr | Glu | Asp | Glu 425 | |
| atc | tat | gag | ctt | tcc | tac | gcc | cgt | gaa | cca | agg | aac | cac | agg | gcc | ccg | 1467 |
| Ile | Tyr | Glu | Leu | Ser 430 | Tyr | Ala | Arg | Glu | Pro 435 | Arg | Asn | His | Arg | Ala 440 | Pro | |
| cca | ctg | aca | cct | tcg | aag | cca | cca | gtt | gta | gtg | gac | tg | gcc | tct | gga | 1515 |
| Pro | Leu | Thr | Pro | Ser | Lys | Pro | Pro | Val | Val | Val | Asp | Trp | Ala | Ser | Gly | |

| 445 | | | | | | | 450 | | | | | 455 | | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|--|
| gtg Val | tct Ser | ccc Pro 460 | aaa Lys | cct Pro | gac Asp | ccg Pro | aag Lys 465 | acc Thr | atc Ile | agc Ser | aaa Lys | cac His 470 | gtc Val | caa Gln | agg Arg | 1563 | |
| atg Met | gtg Val 475 | gat Asp | tct Ser | gtc Val | ttt Phe | aag Lys 480 | aac Asn | tat Tyr | gat Asp | ctc Leu | gac Asp 485 | cag Gln | gat Asp | gga Gly | tat Tyr | 1611 | |
| atc Ile 490 | tct Ser | cag Gln | gag Glu | gag Glu | ttt Phe 495 | gaa Glu | aag Lys | att Ile | gct Ala | gcg Ala 500 | agc Ser | ttt Phe | cca Pro | ttt Phe | tcc Ser 505 | 1659 | |
| ttc Phe | tgt Cys | gtg Val | atg Met | gac Asp 510 | aaa Lys | gat Asp | agg Arg | gag Glu | ggc Gly 515 | ctc Leu | atc Ile | agc Ser | aga Arg | gac Asp 520 | gag Glu | 1707 | |
| atc Ile | aca Thr | gcc Ala | tac Tyr 525 | ttc Phe | atg Met | agg Arg | gcc Ala | agc Ser 530 | tcc Ser | atc Ile | tat Tyr | tcc Ser | aag Lys 535 | ctg Leu | ggc Gly | 1755 | |
| cta Leu | ggc Gly | ttt Phe 540 | cca Pro | cac His | aac Asn | ttt Phe | caa Gln 545 | gag Glu | acc Thr | act Thr | tac Tyr | ctg Leu 550 | aag Lys | ccc Pro | acc Thr | 1803 | |
| ttc Phe | tgt Cys 555 | gac Asp | aac Asn | tgt Cys | gct Ala | ggc Gly 560 | ttt Phe | ctc Leu | tgg Trp | ggc Gly | gtg Val 565 | atc Ile | aag Lys | caa Gln | ggc Gly | 1851 | |
| tat Tyr 570 | cgc Arg | tgt Cys | aaa Lys | gac Asp | tgt Cys 575 | ggg Gly | atg Met | aac Asn | tgc Cys | cac His 580 | aaa Lys | cag Gln | tgc Cys | aaa Lys | gac Asp 585 | 1899 | |
| ctg Leu | gta Val | gtg Val | ttt Phe | gag Glu 590 | tgc Cys | aag Lys | aaa Lys | cga Arg | tcc Ser 595 | aag Lys | agc Ser | ccg Pro | gcg Ala | gta Val 600 | tcc Ser | 1947 | |
| aca Thr | gaa Glu | aac Asn | atc Ile 605 | agc Ser | tct Ser | gtg Val | gtg Val | cca Pro 610 | atg Met | tcc Ser | act Thr | ctt Leu | tgt Cys 615 | cca Pro | ctg Leu | 1995 | |
| gga Gly | acc Thr | aaa Lys 620 | gat Asp | ctg Leu | ctc Leu | cat His | gca Ala 625 | ccc Pro | gaa Glu | gaa Glu | gga Gly | tct Ser 630 | ttc Phe | att Ile | ttc Phe | 2043 | |
| cag Gln | aat Asn 635 | gga Gly | gag Glu | gtt Val | gtg Val | gac Asp 640 | cac His | agt Ser | gag Glu | gag Glu | agc Ser 645 | aag Lys | gat Asp | agg Arg | acc Thr | 2091 | |
| atc Ile 650 | atg Met | ctc Leu | ttg Leu | ggc Gly | gta Val 655 | tcc Ser | tca Ser | cag Gln | aaa Lys | att Ile 660 | tca Ser | gtt Val | cgg Arg | ctg Leu | aag Lys 665 | 2139 | |
| agg Arg | act Thr | gtt Val | gcc Ala | cac His 670 | aag Lys | acc Thr | acc Thr | cag Gln | aca Thr 675 | gaa Glu | tca Ser | ttt Phe | cct Pro | tgg Trp 680 | gtt Val | 2187 | |
| ggc Gly | ggc Gly | gag Glu | atg Met 685 | ccc Pro | cct Pro | ggc Gly | cac His | ttt Phe 690 | gtg Val | ctg Leu | act Thr | tct Ser | cca Pro 695 | aga Arg | aag Lys | 2235 | |
| tca Ser | gca Ala | caa Gln 700 | ggg Gly | gct Ala | ctt Leu | tat Tyr | gtg Val 705 | cac His | agt Ser | cca Pro | gca Ala | tct Ser 710 | ccg Pro | tgc Cys | ccc Pro | 2283 | |
| agc Ser | cca Pro 715 | gca Ala | ctg Leu | gtc Val | cgg Arg | aag Lys 720 | cgg Arg | gca Ala | ttc Phe | gtc Val | aag Lys 725 | tgg Trp | gag Glu | aac Asn | aaa Lys | 2331 | |

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Glu Ser Leu Ile Lys Pro Lys Pro Glu Leu His Leu Arg Leu Arg Thr
730 735 740 745

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Tyr Gln Glu Leu Glu Gln Glu Val Asn Thr Leu Arg Ala Asp Asn Asp
750 755 760

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765 770 775

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Leu₆₅ Ile Asp Ser Cys Ile₇₀ Gln Ser Phe Asp Ala₇₅ Asp Gly Asn Leu Cys₈₀
Arg Ser Asn Gln₈₅ Leu Leu Gln Val Met₉₀ Leu Thr Met His Arg Ile₉₅ Ile
Ile Ser Ser Ala₁₀₀ Glu Leu Leu Gln Lys₁₀₅ Leu Met Asn Leu Tyr₁₁₀ Lys Asp
Ala Leu Glu₁₁₅ Lys Asn Ser Pro Gly₁₂₀ Ile Cys Leu Lys Ile₁₂₅ Cys Tyr Phe
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Lys Lys Arg₁₉₅ Lys Val Ser Leu Leu Phe Asp His Leu Glu Pro Glu Glu₂₀₅
Leu Ser₂₁₀ Glu His Leu Thr Tyr₂₁₅ Leu Glu Phe Lys Ser₂₂₀ Phe Arg Arg Ile
Ser₂₂₅ Phe Ser Asp Tyr Gln₂₃₀ Asn Tyr Leu Val Asn Ser₂₃₅ Cys Val Lys Glu₂₄₀
Asn Pro Thr Met₂₄₅ Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser₂₅₅ Gln
Trp Val Gln₂₆₀ Leu Met Val Leu Ser Arg₂₆₅ Pro Thr Pro Gln Leu Arg Ala₂₇₀
Glu Val Phe₂₇₅ Ile Lys Phe Ile His Val Ala Gln Lys Leu His Gln Leu₂₈₅
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| Lys | Phe | Ile | Gln | Val | Ala | Gln | Lys | Leu | His | Gln | Leu | Gln | Asn | Phe | Asn | |
| | | | 280 | | | | | 285 | | | | | 290 | | | |
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| Leu | Lys | Glu | Thr | Ser | Ser | His | Val | Pro | His | Glu | Ile | Asn | Lys | Val | Leu | |
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| ggc | gag | atg | act | gag | ctg | ctg | tcc | tcc | tcc | aga | aac | tac | gac | aat | tac | 1123 |
| Gly | Glu | Met | Thr | Glu | Leu | Leu | Ser | Ser | Ser | Arg | Asn | Tyr | Asp | Asn | Tyr | |
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| Arg | Arg | Ala | Tyr | Gly | Glu | Cys | Thr | Asp | Phe | Lys | Ile | Pro | Ile | Leu | Gly | |
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| Val | His | Leu | Lys | Asp | Leu | Ile | Ser | Leu | Tyr | Glu | Ala | Met | Pro | Asp | Tyr | |
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| ctg | ggg | gac | ggg | aaa | gtg | aac | gtc | cat | aag | cta | ctg | gcc | cta | tac | aat | 1267 |
| Leu | Gly | Asp | Gly | Lys | Val | Asn | Val | His | Lys | Leu | Leu | Ala | Leu | Tyr | Asn | |
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| cat | atc | agt | gaa | ttg | gtc | cag | ctg | caa | gag | gtg | gcc | cca | ccc | ttg | gag | 1315 |
| His | Ile | Ser | Glu | Leu | Val | Gln | Leu | Gln | Glu | Val | Ala | Pro | Pro | Leu | Glu | |
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| gct | aac | aag | gac | ttg | gta | cac | ttg | ctg | acg | tta | tcc | ctg | gat | ctt | tac | 1363 |
| Ala | Asn | Lys | Asp | Leu | Val | His | Leu | Leu | Thr | Leu | Ser | Leu | Asp | Leu | Tyr | |
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| Asn | His | Arg | Ala | Pro | Pro | Leu | Thr | Pro | Ser | Lys | Pro | Pro | Val | Val | Val | |
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| Lys | His | Val | Gln | Arg | Met | Val | Asp | Ser | Val | Phe | Lys | Asn | Tyr | Asp | His | |
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| Asp | Gln | Asp | Gly | Tyr | Ile | Ser | Gln | Glu | Glu | Phe | Glu | Lys | Ile | Ala | Ala | |
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| Ser | Phe | Pro | Phe | Ser | Phe | Cys | Val | Met | Asp | Lys | Asp | Arg | Glu | Gly | Leu | |
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| atc | agc | agg | gat | gag | atc | aca | gcc | tac | ttc | atg | aga | gcc | agc | tca | atc | 1699 |
| Ile | Ser | Arg | Asp | Glu | Ile | Thr | Ala | Tyr | Phe | Met | Arg | Ala | Ser | Ser | Ile | |
| | | | 520 | | | | | 525 | | | | | 530 | | | |
| tat | tcc | aag | ctg | ggc | ctg | ggc | ttt | cct | cac | aac | ttc | caa | gag | acc | acc | 1747 |
| Tyr | Ser | Lys | Leu | Gly | Leu | Gly | Phe | Pro | His | Asn | Phe | Gln | Glu | Thr | Thr | |
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| Tyr | Leu | Lys | Pro | Thr | Phe | Cys | Asp | Asn | Cys | Ala | Gly | Phe | Leu | Trp | Gly | |
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| gtg | atc | aaa | caa | gga | tat | cga | tgt | aaa | gac | tgc | ggg | atg | aac | tgt | cac | 1843 |
| Val | Ile | Lys | Gln | Gly | Tyr | Arg | Cys | Lys | Asp | Cys | Gly | Met | Asn | Cys | His | |
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| Lys | Gln | Cys | Lys | Asp | Leu | Val | Val | Phe | Glu | Cys | Lys | Lys | Arg | Ala | Lys | |
| | | | | 585 | | | | | 590 | | | | | 595 | | |
| aac | cca | gta | gct | ccc | aca | gag | aac | aac | act | tct | gtg | ggg | cca | gtg | tcc | 1939 |
| Asn | Pro | Val | Ala | Pro | Thr | Glu | Asn | Asn | Thr | Ser | Val | Gly | Pro | Val | Ser | |
| | | | 600 | | | | | 605 | | | | | 610 | | | |
| aac | ctt | tgc | tca | ttg | gga | gcc | aaa | gat | ctg | ctc | cat | gca | cct | gag | gaa | 1987 |
| Asn | Leu | Cys | Ser | Leu | Gly | Ala | Lys | Asp | Leu | Leu | His | Ala | Pro | Glu | Glu | |
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| Ser | Leu | Arg | Leu | Lys | Arg | Ala | Val | Ala | His | Lys | Ala | Thr | Gln | Thr | Glu | |
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| | 745 750 755 | | | |
| act ctg aaa gca gat aat gat gcc cta aag atc caa ctg aaa tat gca | Thr Leu Lys Ala Asp Asn Asp Ala Leu Lys Ile Gln Leu Lys Tyr Ala | 2419 | | |
| | 760 765 770 | | | |
| cag aag aaa ata gaa tcc ctc cag ctt gaa aaa agc aat cat gtc tta | Gln Lys Lys Ile Glu Ser Leu Gln Leu Glu Lys Ser Asn His Val Leu | 2467 | | |
| | 775 780 785 | | | |
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| taactgtcct cactattaat actatttaga aataagctaa ttggatcagt ggcttaaata | | 3474 | | |
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 35 40 45
 Met Met Val Ser Leu Gly His Leu Ala Lys Gly Ala Ser Leu Asp Asp
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 Leu Ile Asp Ser Cys Ile Gln Ser Phe Asp Ala Asp Gly Asn Leu Cys
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 Arg Ser Asn Gln Leu Leu Gln Val Met Leu Thr Met His Arg Ile Val
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 Ile Ser Ser Ala Glu Leu Leu Gln Lys Val Ile Thr Leu Tyr Lys Asp
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Gly Glu Glu Leu His Cys Arg Leu Ile Asp Thr Thr Gln Ile Asn Ala
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Arg Asp Trp Ser Arg Lys Leu Thr Gln Arg Ile Lys Ser Asn Thr Ser
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Lys Lys Arg Lys Val Ser Leu Leu Phe Asp His Leu Glu Pro Glu Glu
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Leu Ser Glu His Leu Thr Tyr Leu Glu Phe Lys Ser Phe Arg Arg Ile
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Ser Phe Ser Asp Tyr Gln Asn Tyr Leu Val Asn Ser Cys Val Lys Glu
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Asn Pro Thr Met Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser Gln
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Trp Val Gln Leu Met Val Leu Ser Arg Pro Thr Pro Gln Leu Arg Ala
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Glu Val Phe Ile Lys Phe Ile Gln Val Ala Gln Lys Leu His Gln Leu
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Gln Asn Phe Asn Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser
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Ser Ile Ser Arg Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile
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Asn Lys Val Leu Gly Glu Met Thr Glu Leu Leu Ser Ser Ser Arg Asn
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Tyr Asp Asn Tyr Arg Arg Ala Tyr Gly Glu Cys Thr Asp Phe Lys Ile
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Pro Pro Leu Glu Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser
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Leu Asp Leu Tyr Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala
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Arg Glu Pro Arg Asn His Arg Ala Pro Pro Leu Thr Pro Ser Lys Pro
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Pro Val Val Val Asp Trp Ala Ser Gly Val Ser Pro Lys Pro Asp Pro
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Lys Thr Ile Ser Lys His Val Gln Arg Met Val Asp Ser Val Phe Lys
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Asn Tyr Asp His Asp Gln Asp Gly Tyr Ile Ser Gln Glu Glu Phe Glu
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Lys Ile Ala Ala Ser Phe Pro Phe Ser Phe Cys Val Met Asp Lys Asp
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Arg Glu Gly Leu Ile Ser Arg Asp Glu Ile Thr Ala Tyr Phe Met Arg
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Gln Glu Thr Thr Tyr Leu Lys Pro Thr Phe Cys Asp Asn Cys Ala Gly
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Phe Leu Trp Gly Val Ile Lys Gln Gly Tyr Arg Cys Lys Asp Cys Gly
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Met Asn Cys His Lys Gln Cys Lys Asp Leu Val Val Phe Glu Cys Lys
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Lys Arg Ala Lys Asn Pro Val Ala Pro Thr Glu Asn Asn Thr Ser Val
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Thr Gln Thr Glu Ser Gln Pro Trp Ile Gly Ser Glu Gly Pro Ser Gly
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Pro Phe Val Leu Ser Ser Pro Arg Lys Thr Ala Gln Asp Thr Leu Tyr
690 695 700
Val Leu Pro Ser Pro Thr Ser Pro Cys Pro Ser Pro Val Leu Val Arg
705 710 715 720
Lys Arg Ala Phe Val Lys Trp Glu Asn Lys Asp Ser Leu Ile Lys Ser
725 730 735
Lys Glu Glu Leu Arg His Leu Arg Leu Pro Thr Tyr Gln Glu Leu Glu
740 745 750
Gln Glu Ile Asn Thr Leu Lys Ala Asp Asn Asp Ala Leu Lys Ile Gln
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ggtggagagt ccagctgtgg gggcaccgca ggtgagaggt ctcccggacg tggttccgga 180
 gggcacgctg ctcaat atg gtg ctg aag aga atg cac cgt ccc cgg tgc tgc 232
 Met Val Leu Lys Arg Met His Arg Pro Arg Cys Cys
 1 5 10
 tct tac cag cta gtg ttc gag cac cgg cgc cca agc tgc atc cag gga 280
 Ser Tyr Gln Leu Val Phe Glu His Arg Arg Pro Ser Cys Ile Gln Gly
 15 20 25
 ctt cgc tgg acg cca ctt acc aac agt gag ggc tcc ctg gac ttc aga 328
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 gtg agc ctg gag cag gcc acc aca gag cat gtg cac aag gcc ggg aag 376
 Val Ser Leu Glu Gln Ala Thr Thr Glu His Val His Lys Ala Gly Lys
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 Leu Leu Tyr Arg His Leu Leu Ala Thr Tyr Pro Thr Leu Ile Arg Asp
 65 70 75
 aga aaa tac cat ctg cga cta cat cgg cag tgc tgc tct ggc cgg gag 472
 Arg Lys Tyr His Leu Arg Leu His Arg Gln Cys Cys Ser Gly Arg Glu
 80 85 90
 cta gtg gat ggg atc ttg gct ctg ggt ctt ggg gtc cac tca cgg agc 520
 Leu Val Asp Gly Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser
 95 100 105
 caa gct gtg ggc atc tgc cag gtg ttg ctg gat gag ggt gcc ctt tgc 568
 Gln Ala Val Gly Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys
 110 115 120
 cat gta aaa cat gac tgg acc ttc cag gac cga gac gcc caa ttc tac 616
 His Val Lys His Asp Trp Thr Phe Gln Asp Arg Asp Ala Gln Phe Tyr
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 Arg Phe Pro Gly Pro Glu Pro Gln Pro Ala Gly Thr His Asp Val Glu
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 gag gag ctt gtt gag gca atg gcc cta ctc tcc cag cga ggg cct gat 712
 Glu Glu Leu Val Glu Ala Met Ala Leu Ser Gln Arg Gly Pro Asp
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 gcc cta ctc act gtt gca ctc cgg aag tcc ccg ggt cag cgt aca gat 760
 Ala Leu Leu Thr Val Ala Leu Arg Lys Ser Pro Gly Gln Arg Thr Asp
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 gaa gag ctg gac ctc atc ttc gag gag ctc gta cat atc aag gcg gtg 808
 Glu Glu Leu Asp Leu Ile Phe Glu Glu Leu Val His Ile Lys Ala Val
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 gct cac ctt tct aac tcg gtg aaa cgg gaa cta gct gct gtt ctg ctc 856
 Ala His Leu Ser Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu
 205 210 215 220
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 Phe Glu Pro His Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp
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 aag ggt acc tca tgg tac att atc tgg aag gga tct gtc aat gtg gtg 952
 Lys Gly Thr Ser Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val
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 Thr Arg Gly Lys Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe

| 255 | | | | | | 260 | | | | | 265 | | | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|--|
| gga Gly | cag Gln 270 | ctg Leu | gct Ala | ctg Leu | gtg Val | aac Asn 275 | gac Asp | gca Ala | cct Pro | cga Arg | gca Ala 280 | gcc Ala | acc Thr | atc Ile | atc Ile | 1048 | |
| ctt Leu 285 | cga Arg | gaa Glu | aat Asn | aac Asn | tgt Cys 290 | cac His | ttt Phe | ctg Leu | cgt Arg | gtg Val 295 | gac Asp | aag Lys | cag Gln | gac Asp | ttc Phe 300 | 1096 | |
| aac Asn | cgc Arg | atc Ile | atc Ile | aag Lys 305 | gat Asp | gtg Val | gaa Glu | gca Ala | aaa Lys 310 | acc Thr | atg Met | aga Arg | ctg Leu | gaa Glu 315 | gaa Glu | 1144 | |
| cac His | ggc Gly | aaa Lys | gtg Val 320 | gtg Val | tta Leu | gtt Val | ttg Leu | gag Glu 325 | aga Arg | acc Thr | tct Ser | cag Gln | ggt Gly 330 | gct Ala | ggc Gly | 1192 | |
| cct Pro | tcc Ser | cgc Arg 335 | cct Pro | ccg Pro | acc Thr | cca Pro | ggc Gly 340 | agg Arg | aac Asn | cga Arg | tat Tyr | acg Thr 345 | gta Val | atg Met | tct Ser | 1240 | |
| ggc Gly | acc Thr 350 | cca Pro | gag Glu | aaa Lys | atc Ile | cta Leu 355 | gaa Glu | ctc Leu | ctg Leu | ttg Leu | gag Glu 360 | gct Ala | atg Met | aga Arg | ccg Pro | 1288 | |
| gat Asp 365 | tcc Ser | agt Ser | gct Ala | cat His | gac Asp 370 | cca Pro | aca Thr | gag Glu | aca Thr | ttc Phe 375 | ctc Leu | agt Ser | gac Asp | ttc Phe | ctg Leu 380 | 1336 | |
| ctg Leu | acg Thr | cac His | agt Ser | gtc Val 385 | ttc Phe | atg Met | ccc Pro | tgc Cys | aca Thr 390 | cag Gln | ctc Leu | ttt Phe | gcc Ala | gcc Ala 395 | ctc Leu | 1384 | |
| ctg Leu | cac His | cac His | ttc Phe 400 | cac His | gtg Val | gag Glu | cca Pro | tca Ser 405 | gag Glu | cct Pro | gcc Ala | ggg Gly | ggc Gly 410 | agc Ser | gag Glu | 1432 | |
| cag Gln | gaa Glu | cgc Arg 415 | agc Ser | acc Thr | tac Tyr | atc Ile | tgc Cys 420 | aac Asn | aag Lys | agg Arg | cag Gln | cag Gln 425 | att Ile | ctg Leu | cgt Arg | 1480 | |
| ctg Leu | gtc Val 430 | agc Ser | cgg Arg | tgg Trp | gtg Val | gcc Ala 435 | ctc Leu | tac Tyr | agc Ser | ccc Pro | atg Met 440 | ctc Leu | cgc Arg | tca Ser | gat Asp | 1528 | |
| ccc Pro 445 | gtg Val | gcc Ala | acc Thr | agc Ser | ttc Phe 450 | ctc Leu | cag Gln | aaa Lys | ctc Leu | tca Ser 455 | gac Asp | ctg Leu | gtg Val | agc Ser | aga Arg 460 | 1576 | |
| gat Asp | acc Thr | cga Arg | ctt Leu | agc Ser 465 | aac Asn | ttg Leu | ctg Leu | agg Arg | gaa Glu 470 | cag Gln | tat Tyr | ccg Pro | gag Glu | aga Arg 475 | cgg Arg | 1624 | |
| cga Arg | cac His | cac His | agg Arg 480 | ttg Leu | gag Glu | aat Asn | ggc Gly | tgt Cys 485 | ggg Gly | aat Asn | gta Val | tct Ser | cct Pro 490 | cag Gln | acc Thr | 1672 | |
| aag Lys | gcc Ala | cgg Arg 495 | aat Asn | gca Ala | cct Pro | gtt Val | tgg Trp 500 | ttt Phe | cct Pro | aac Asn | cat His | gag Glu 505 | gaa Glu | ccc Pro | ctc Leu | 1720 | |
| cca Pro | agc Ser 510 | agc Ser | gct Ala | ggg Gly | gcc Ala | atc Ile 515 | cga Arg | gtc Val | ggg Gly | gac Asp | aaa Lys 520 | gtc Val | ccc Pro | tat Tyr | gat Asp | 1768 | |
| atc Ile 525 | tgc Cys | aga Arg | ccc Pro | gac Asp | cac His 530 | tgc Ser | gtg Val | ctg Leu | acc Thr | ctg Leu 535 | cac His | ctg Leu | ccg Pro | gtg Val | aca Thr 540 | 1816 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| gcc | tcc | gtg | agg | gaa | gtg | atg | gca | gct | ttg | gcc | cat | gag | gac | cac | tgg | 1864 |
| Ala | Ser | Val | Arg | Glu | Val | Met | Ala | Ala | Leu | Ala | His | Glu | Asp | His | Trp | |
| | | | | 545 | | | | | 550 | | | | | 555 | | |
| acc | aag | ggg | cag | gtg | ctg | gta | aag | gtc | aat | tct | gcc | ggt | gat | gtc | gtt | 1912 |
| Thr | Lys | Gly | Gln | Val | Leu | Val | Lys | Val | Asn | Ser | Ala | Gly | Asp | Val | Val | |
| | | | 560 | | | | | 565 | | | | | 570 | | | |
| ggc | ttg | cag | cca | gat | gcc | cgc | ggg | gtg | gcc | aca | tcc | ctg | ggg | ctc | aat | 1960 |
| Gly | Leu | Gln | Pro | Asp | Ala | Arg | Gly | Val | Ala | Thr | Ser | Leu | Gly | Leu | Asn | |
| | | 575 | | | | | 580 | | | | | 585 | | | | |
| gag | cgg | atc | ttt | gtt | gtc | gac | cca | cag | gaa | gtg | cac | gag | ctg | acc | cca | 2008 |
| Glu | Arg | Ile | Phe | Val | Val | Asp | Pro | Gln | Glu | Val | His | Glu | Leu | Thr | Pro | |
| | 590 | | | | | 595 | | | | | 600 | | | | | |
| cac | cct | gag | cag | ctg | ggg | ccc | act | ctg | ggt | tct | tct | gag | atg | ctg | gac | 2056 |
| His | Pro | Glu | Gln | Leu | Gly | Pro | Thr | Leu | Gly | Ser | Ser | Glu | Met | Leu | Asp | |
| 605 | | | | | 610 | | | | | 615 | | | | | 620 | |
| cta | gtg | agt | gcc | aag | gac | ctg | gca | ggc | cag | ctc | aca | gag | cat | gac | tgg | 2104 |
| Leu | Val | Ser | Ala | Lys | Asp | Leu | Ala | Gly | Gln | Leu | Thr | Glu | His | Asp | Trp | |
| | | | | 625 | | | | | 630 | | | | | 635 | | |
| aac | ctc | ttc | aac | agg | atc | cac | cag | gtg | gag | ctg | atc | cac | tat | gta | ctg | 2152 |
| Asn | Leu | Phe | Asn | Arg | Ile | His | Gln | Val | Glu | Leu | Ile | His | Tyr | Val | Leu | |
| | | | 640 | | | | | 645 | | | | | 650 | | | |
| ggc | ccc | cag | cac | ctg | cgg | gac | gtc | acc | act | gca | aac | ctg | gag | cgc | ttc | 2200 |
| Gly | Pro | Gln | His | Leu | Arg | Asp | Val | Thr | Thr | Ala | Asn | Leu | Glu | Arg | Phe | |
| | | 655 | | | | | 660 | | | | | 665 | | | | |
| atg | cga | cgc | ttc | aac | gag | ctg | cag | tac | tgg | gtg | gcc | acc | gaa | ctc | tgt | 2248 |
| Met | Arg | Arg | Phe | Asn | Glu | Leu | Gln | Tyr | Trp | Val | Ala | Thr | Glu | Leu | Cys | |
| | 670 | | | | | 675 | | | | | 680 | | | | | |
| ctc | tgc | ccg | gtt | cct | ggc | ccc | cgg | gct | cag | cta | ctc | cgg | aag | ttc | atc | 2296 |
| Leu | Cys | Pro | Val | Pro | Gly | Pro | Arg | Ala | Gln | Leu | Leu | Arg | Lys | Phe | Ile | |
| | 685 | | | | 690 | | | | | 695 | | | | | 700 | |
| aag | ctg | gca | gcc | cac | ctc | aag | gag | cag | aag | aat | ctc | aac | tct | ttc | ttt | 2344 |
| Lys | Leu | Ala | Ala | His | Leu | Lys | Glu | Gln | Lys | Asn | Leu | Asn | Ser | Phe | Phe | |
| | | | | 705 | | | | | 710 | | | | | 715 | | |
| gcg | gtc | atg | ttt | ggc | ctc | agc | aac | tgc | gcc | atc | agc | cgc | ctg | gcc | cac | 2392 |
| Ala | Val | Met | Phe | Gly | Leu | Ser | Asn | Ser | Ala | Ile | Ser | Arg | Leu | Ala | His | |
| | | | 720 | | | | | 725 | | | | | 730 | | | |
| acc | tgg | gag | cgt | ctg | ccc | cat | aaa | gta | cgg | aag | ctg | tac | tgc | gcc | ctg | 2440 |
| Thr | Trp | Glu | Arg | Leu | Pro | His | Lys | Val | Arg | Lys | Leu | Tyr | Ser | Ala | Leu | |
| | | 735 | | | | | 740 | | | | | 745 | | | | |
| gaa | agg | ttg | ctg | gac | cct | tcc | tgg | aac | cac | cga | gtg | tac | cga | ttg | gct | 2488 |
| Glu | Arg | Leu | Leu | Asp | Pro | Ser | Trp | Asn | His | Arg | Val | Tyr | Arg | Leu | Ala | |
| | 750 | | | | | 755 | | | | | 760 | | | | | |
| ctc | acc | aag | ctc | tct | cct | cct | gtc | atc | cct | ttc | atg | ccc | ctg | cta | ctc | 2536 |
| Leu | Thr | Lys | Leu | Ser | Pro | Pro | Val | Ile | Pro | Phe | Met | Pro | Leu | Leu | Leu | |
| | | | | | 770 | | | | | 775 | | | | | 780 | |
| aaa | gac | atg | acc | ttc | att | cat | gaa | ggg | aac | cac | aca | ctg | gta | gaa | aac | 2584 |
| Lys | Asp | Met | Thr | Phe | Ile | His | Glu | Gly | Asn | His | Thr | Leu | Val | Glu | Asn | |
| | | | | 785 | | | | | 790 | | | | | 795 | | |
| ctc | atc | aac | ttt | gag | aag | atg | cga | atg | atg | gcc | aga | gcc | gtg | cgg | atg | 2632 |
| Leu | Ile | Asn | Phe | Glu | Lys | Met | Arg | Met | Met | Ala | Arg | Ala | Val | Arg | Met | |
| | | | 800 | | | | | 805 | | | | | 810 | | | |

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 Leu His His Cys Arg Ser His Ser Thr Ala Pro Leu Ser Pro Leu Arg
 815 820

agc cgg gtt tcc cac atc cac gag gac agc cag gca tca aga atc tcc 2728
 Ser Arg Val Ser His Ile His Glu Asp Ser Gln Ala Ser Arg Ile Ser
 830 835 840

aca tgt tcc gag cag tcc ctg agc acc cgg agt cca gcc agc acc tgg 2776
 Thr Cys Ser Glu Gln Ser Leu Ser Thr Arg Ser Pro Ala Ser Thr Trp
 845 850 855 860

gct tat gtc cag cag ctg aag gtc att gac aac cag cgg gaa ctg tcc 2824
 Ala Tyr Val Gln Gln Leu Lys Val Ile Asp Asn Gln Arg Glu Leu Ser
 865 870 875

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 Arg Leu Ser Arg Glu Leu Glu Pro
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 35 40 45
 Gln Ala Thr Thr Glu His Val His Lys Ala Gly Lys Leu Leu Tyr Arg
 50 55 60
 His Leu Leu Ala Thr Tyr Pro Thr Leu Ile Arg Asp Arg Lys Tyr His
 65 70 75 80
 Leu Arg Leu His Arg Gln Cys Cys Ser Gly Arg Glu Leu Val Asp Gly
 85 90 95
 Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser Gln Ala Val Gly
 100 105 110
 Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys His Val Lys His
 115 120 125

Asp Trp Thr Phe Gln Asp Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly
 130 135 140
 Pro Glu Pro Gln Pro Ala Gly Thr His Asp Val Glu Glu Glu Leu Val
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 Glu Ala Met Ala Leu Leu Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr
 165 170 175
 Val Ala Leu Arg Lys Ser Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp
 180 185 190
 Leu Ile Phe Glu Glu Leu Val His Ile Lys Ala Val Ala His Leu Ser
 195 200 205
 Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu Phe Glu Pro His
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 Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser
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 Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe Gly Gln Leu Ala
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 Leu Val Asn Asp Ala Pro Arg Ala Ala Thr Ile Ile Leu Arg Glu Asn
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 Asn Cys His Phe Leu Arg Val Asp Lys Gln Asp Phe Asn Arg Ile Ile
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 Lys Asp Val Glu Ala Lys Thr Met Arg Leu Glu Glu His Gly Lys Val
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 Val Leu Val Leu Glu Arg Thr Ser Gln Gly Ala Gly Pro Ser Arg Pro
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 Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser Gly Thr Pro Glu
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 Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Arg Pro Asp Ser Ser Ala
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 His Asp Pro Thr Glu Thr Phe Leu Ser Asp Phe Leu Leu Thr His Ser
 370 375 380
 Val Phe Met Pro Cys Thr Gln Leu Phe Ala Ala Leu Leu His His Phe
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 His Val Glu Pro Ser Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser
 405 410 415
 Thr Tyr Ile Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Arg
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 Trp Val Ala Leu Tyr Ser Pro Met Leu Arg Ser Asp Pro Val Ala Thr
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 Ser Phe Leu Gln Lys Leu Ser Asp Leu Val Ser Arg Asp Thr Arg Leu
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 Ser Asn Leu Leu Arg Glu Gln Tyr Pro Glu Arg Arg Arg His His Arg
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 Leu Glu Asn Gly Cys Gly Asn Val Ser Pro Gln Thr Lys Ala Arg Asn
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Ala Pro Val Trp Phe Pro Asn His Glu Glu Pro Leu Pro Ser Ser Ala
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Gly Ala Ile Arg Val Gly Asp Lys Val Pro Tyr Asp Ile Cys Arg Pro
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Asp His Ser Val Leu Thr Leu His Leu Pro Val Thr Ala Ser Val Arg
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Val Leu Val Lys Val Asn Ser Ala Gly Asp Val Val Gly Leu Gln Pro
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Asp Ala Arg Gly Val Ala Thr Ser Leu Gly Leu Asn Glu Arg Ile Phe
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Val Val Asp Pro Gln Glu Val His Glu Leu Thr Pro His Pro Glu Gln
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Leu Gly Pro Thr Leu Gly Ser Ser Glu Met Leu Asp Leu Val Ser Ala
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Lys Asp Leu Ala Gly Gln Leu Thr Glu His Asp Trp Asn Leu Phe Asn
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Leu Arg Asp Val Thr Thr Ala Asn Leu Glu Arg Phe Met Arg Arg Phe
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Asn Glu Leu Gln Tyr Trp Val Ala Thr Glu Leu Cys Leu Cys Pro Val
675 680 685

Pro Gly Pro Arg Ala Gln Leu Leu Arg Lys Phe Ile Lys Leu Ala Ala
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Leu Pro His Lys Val Arg Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu
740 745 750

Asp Pro Ser Trp Asn His Arg Val Tyr Arg Leu Ala Leu Thr Lys Leu
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Ser Pro Pro Val Ile Pro Phe Met Pro Leu Leu Leu Lys Asp Met Thr
770 775 780

Phe Ile His Glu Gly Asn His Thr Leu Val Glu Asn Leu Ile Asn Phe
785 790 795 800

Glu Lys Met Arg Met Met Ala Arg Ala Val Arg Met Leu His His Cys
805 810 815

Arg Ser His Ser Thr Ala Pro Leu Ser Pro Leu Arg Ser Arg Val Ser
820 825 830

His Ile His Glu Asp Ser Gln Ala Ser Arg Ile Ser Thr Cys Ser Glu
835 840 845

Gln Ser Leu Ser Thr Arg Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln
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Glu Leu Glu Pro

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ggcaggtggg cctggctgtg gaggatagcc cagctctggg agcaccgcgg gtgggagccc 180
tccctgacgt ggtgccggag gggacactac tcaac atg gtg ttg aga agg atg 233
Met Val Leu Arg Arg Met
1 5
cac cgg ccc cga agc tgc tcc tac cag ctg ctg ctg gag cac cag cat 281
His Arg Pro Arg Ser Cys Ser Tyr Gln Leu Leu Leu Glu His Gln His
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Pro Ser Cys Ile Gln Gly Leu Arg Trp Thr Pro Leu Thr Asn Ser Glu
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gag tcc ctg gat ttc agc gag agc ctg gag cag gcc tcc aca gag cgg 377
Glu Ser Leu Asp Phe Ser Glu Ser Leu Glu Gln Ala Ser Thr Glu Arg
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gtg ctc agg gct ggg agg cag ctg cat cag cat cta ctg gcc acc tgc 425
Val Leu Arg Ala Gly Arg Gln Leu His Gln His Leu Leu Ala Thr Cys
55 60 65 70
cca aac ctc atc cga gac cgg aag tac cac ctt agg ctc tat cgg cag 473
Pro Asn Leu Ile Arg Asp Arg Lys Tyr His Leu Arg Leu Tyr Arg Gln
75 80 85
tgc tgc tct ggc cgg gag ctg gtg gat ggg atc ttg gcc ctg gga ctt 521
Cys Cys Ser Gly Arg Glu Leu Val Asp Gly Ile Leu Ala Leu Gly Leu
90 95 100
ggg gtc cat tcc cgg agc caa gtt gtg gga atc tgc cag gtg ctg ctg 569
Gly Val His Ser Arg Ser Gln Val Val Gly Ile Cys Gln Val Leu Leu
105 110 115
gat gaa ggt gcc ctc tgc cat gtg aaa cac gac tgg gcc ttc cag gac 617
Asp Glu Gly Ala Leu Cys His Val Lys His Asp Trp Ala Phe Gln Asp
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cga gat gcc caa ttc tac cgg ttc ccc ggg ccc gag ccc gag ccc gtg 665
Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly Pro Glu Pro Glu Pro Val
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gga act cat gag atg gag gag gag ttg gcc gaa gct gtg gcc ctg ctc 713
Gly Thr His Glu Met Glu Glu Glu Leu Ala Glu Ala Val Ala Leu Leu
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tcc cag cgg ggg cct gac gcc ctg ctc act gtg gca ctt cga aag ccc 761

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Ser | Gln | Arg | Gly | Pro | Asp | Ala | Leu | Leu | Thr | Val | Ala | Leu | Arg | Lys | Pro | |
| | | | 170 | | | | | 175 | | | | | 180 | | | |
| cca | ggt | cag | cgc | acg | gat | gaa | gag | ctg | gac | ctc | atc | ttt | gag | gag | ctg | 809 |
| Pro | Gly | Gln | Arg | Thr | Asp | Glu | Glu | Leu | Asp | Leu | Ile | Phe | Glu | Glu | Leu | |
| | | 185 | | | | | 190 | | | | | 195 | | | | |
| ctg | cac | atc | aag | gct | gtg | gcc | cac | ctc | tcc | aac | tgc | gtg | aag | cga | gaa | 857 |
| Leu | His | Ile | Lys | Ala | Val | Ala | His | Leu | Ser | Asn | Ser | Val | Lys | Arg | Glu | |
| | 200 | | | | | 205 | | | | | 210 | | | | | |
| tta | gcg | gct | gtt | ctg | ctc | ttt | gaa | cca | cac | agc | aag | gca | ggg | acc | gtg | 905 |
| Leu | Ala | Ala | Val | Leu | Leu | Phe | Glu | Pro | His | Ser | Lys | Ala | Gly | Thr | Val | |
| | 215 | | | | 220 | | | | | 225 | | | | | 230 | |
| ttg | ttc | agc | cag | ggg | gac | aag | ggc | act | tgc | tgg | tac | att | atc | tgg | aag | 953 |
| Leu | Phe | Ser | Gln | Gly | Asp | Lys | Gly | Thr | Ser | Trp | Tyr | Ile | Ile | Trp | Lys | |
| | | | | 235 | | | | | 240 | | | | | 245 | | |
| gga | tct | gtc | aac | gtg | gtg | acc | cat | ggc | aag | ggg | ctg | gtg | acc | acc | ctg | 1001 |
| Gly | Ser | Val | Asn | Val | Val | Thr | His | Gly | Lys | Gly | Leu | Val | Thr | Thr | Leu | |
| | | | 250 | | | | | 255 | | | | | 260 | | | |
| cat | gag | gga | gat | gat | ttt | gga | cag | ctg | gct | ctg | gtg | aat | gat | gca | ccc | 1049 |
| His | Glu | Gly | Asp | Asp | Phe | Gly | Gln | Leu | Ala | Leu | Val | Asn | Asp | Ala | Pro | |
| | | 265 | | | | | 270 | | | | | 275 | | | | |
| cgg | gca | gcc | acc | atc | atc | ctg | cga | gaa | tac | aac | tgt | cat | ttc | ctg | cgt | 1097 |
| Arg | Ala | Ala | Thr | Ile | Ile | Leu | Arg | Glu | Tyr | Asn | Cys | His | Phe | Leu | Arg | |
| | 280 | | | | | 285 | | | | | 290 | | | | | |
| gtg | gac | aag | cag | gac | ttc | aac | cgt | atc | atc | aag | gat | gtg | gag | gca | aag | 1145 |
| Val | Asp | Lys | Gln | Asp | Phe | Asn | Arg | Ile | Ile | Lys | Asp | Val | Glu | Ala | Lys | |
| | 295 | | | | 300 | | | | | 305 | | | | | 310 | |
| acc | atg | cgg | ctg | gaa | gaa | cat | ggc | aaa | gtg | gtg | ctg | gtg | ctg | gag | aga | 1193 |
| Thr | Met | Arg | Leu | Glu | Glu | His | Gly | Lys | Val | Val | Leu | Val | Leu | Glu | Arg | |
| | | | | 315 | | | | | 320 | | | | | 325 | | |
| gcc | tct | cag | ggc | gcc | ggc | cct | tcc | cga | ccc | cca | acc | cca | ggc | agg | aac | 1241 |
| Ala | Ser | Gln | Gly | Ala | Gly | Pro | Ser | Arg | Pro | Pro | Thr | Pro | Gly | Arg | Asn | |
| | | | 330 | | | | | 335 | | | | | 340 | | | |
| cgg | tat | aca | gtg | atg | tct | ggc | act | cca | gat | aag | atc | cta | gag | ctt | ctg | 1289 |
| Arg | Tyr | Thr | Val | Met | Ser | Gly | Thr | Pro | Asp | Lys | Ile | Leu | Glu | Leu | Leu | |
| | | 345 | | | | | 350 | | | | | 355 | | | | |
| ttg | gag | gcc | atg | gga | cta | gat | tcc | agt | gct | cat | gac | cca | aaa | gaa | aca | 1337 |
| Leu | Glu | Ala | Met | Gly | Leu | Asp | Ser | Ser | Ala | His | Asp | Pro | Lys | Glu | Thr | |
| | 360 | | | | | 365 | | | | | 370 | | | | | |
| ttc | ctc | agc | gac | ttc | ctc | ctg | acc | cac | agg | gtc | ttc | atg | ccc | agc | gcc | 1385 |
| Phe | Leu | Ser | Asp | Phe | Leu | Leu | Thr | His | Arg | Val | Phe | Met | Pro | Ser | Ala | |
| | 375 | | | | 380 | | | | | 385 | | | | | 390 | |
| caa | ctc | tgc | gct | gcc | ctt | ctg | cac | cac | ttc | cat | gtg | gag | cct | gcg | ggt | 1433 |
| Gln | Leu | Cys | Ala | Ala | Leu | Leu | His | His | Phe | His | Val | Glu | Pro | Ala | Gly | |
| | | | | 395 | | | | | 400 | | | | | 405 | | |
| ggc | agc | gag | cag | gag | cgc | agc | acc | tac | gtc | tgc | aac | aag | agg | cag | cag | 1481 |
| Gly | Ser | Glu | Gln | Glu | Arg | Ser | Thr | Tyr | Val | Cys | Asn | Lys | Arg | Gln | Gln | |
| | | | 410 | | | | | 415 | | | | | 420 | | | |
| atc | ttg | cgg | ctg | gtc | agc | cag | tgg | gtg | gcc | ctg | tat | ggc | tcc | atg | ctc | 1529 |
| Ile | Leu | Arg | Leu | Val | Ser | Gln | Trp | Val | Ala | Leu | Tyr | Gly | Ser | Met | Leu | |
| | | 425 | | | | | 430 | | | | | 435 | | | | |
| cac | act | gac | cct | gtg | gcc | acc | agc | ttc | ctc | cac | aaa | ctc | tca | gac | ctg | 1577 |
| His | Thr | Asp | Pro | Val | Ala | Thr | Ser | Phe | Leu | His | Lys | Leu | Ser | Asp | Leu | |

| 440 | 445 | 450 | |
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| gtg ggc agg gac acc cga ctc agc aac ctg ctg agg gag cag tgg cca Val Gly Arg Asp Thr Arg Leu Ser Asn Leu Leu Arg Glu Gln Trp Pro 455 460 465 470 | | | 1625 |
| gag agg cgg cga tgc cac agg ttg gag aat ggc tgt ggg aat gca tct Glu Arg Arg Arg Cys His Arg Leu Glu Asn Gly Cys Gly Asn Ala Ser 475 480 485 | | | 1673 |
| cct cag atg aag gcc cgg aac ttg cct gtt tgg ctc ccc aac cag gac Pro Gln Met Lys Ala Arg Asn Leu Pro Val Trp Leu Pro Asn Gln Asp 490 500 | | | 1721 |
| gag ccc ctt cct ggc agc agc tgt gcc atc caa gtt ggg gat aaa gtc Glu Pro Leu Pro Gly Ser Ser Cys Ala Ile Gln Val Gly Asp Lys Val 505 510 515 | | | 1769 |
| ccc tat gac atc tgc cgg cca gac cac tca gtg ttg acc ctg cag ctg Pro Tyr Asp Ile Cys Arg Pro Asp His Ser Val Leu Thr Leu Gln Leu 520 525 530 | | | 1817 |
| cct gtg aca gcc tcc gtg aga gag gtg atg gca gcg ttg gcc cag gag Pro Val Thr Ala Ser Val Arg Glu Val Met Ala Ala Leu Ala Gln Glu 535 540 545 550 | | | 1865 |
| gat ggc tgg acc aag ggg cag gtg ctg gtg aag gtc aat tct gca ggt Asp Gly Trp Thr Lys Gly Gln Val Leu Val Lys Val Asn Ser Ala Gly 555 560 565 | | | 1913 |
| gat gcc att ggc ctg cag cca gat gcc cgt ggt gtg gcc aca tct ctg Asp Ala Ile Gly Leu Gln Pro Asp Ala Arg Gly Val Ala Thr Ser Leu 570 575 580 | | | 1961 |
| ggg ctc aat gag cgt ctc ttt gtt gtc aac cca cag gaa gtg cat gag Gly Leu Asn Glu Arg Leu Phe Val Val Asn Pro Gln Glu Val His Glu 585 590 595 | | | 2009 |
| ctg atc cca cac cct gac cag ctg ggg ccc act gtg ggc tct gct gag Leu Ile Pro His Pro Asp Gln Leu Gly Pro Thr Val Gly Ser Ala Glu 600 605 610 | | | 2057 |
| ggg ctg gac ctg gtg agt gcc aag gac ctg gca ggc cag ctg acg gac Gly Leu Asp Leu Val Ser Ala Lys Asp Leu Ala Gly Gln Leu Thr Asp 615 620 625 630 | | | 2105 |
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| tat gtg ctg ggc ccc cag cat ctg cgg gat gtc acc acc gcc aac ctg Tyr Val Leu Gly Pro Gln His Leu Arg Asp Val Thr Thr Ala Asn Leu 650 655 660 | | | 2201 |
| gag cgc ttc atg cgc cgc ttc aat gag ctg cag tac tgg gtg gcc acc Glu Arg Phe Met Arg Arg Phe Asn Glu Leu Gln Tyr Trp Val Ala Thr 665 670 675 | | | 2249 |
| gag ctg tgt ctc tgc ccc gtg ccc ggc ccc cgg gcc cag ctg ctc aaa Glu Leu Cys Leu Cys Pro Val Pro Gly Pro Arg Ala Gln Leu Leu Lys 680 685 690 | | | 2297 |
| aag ttc att aag ctg gcg gcc cac ctc aag gag cag aag aat gtc aat Lys Phe Ile Lys Leu Ala Ala His Leu Lys Glu Gln Lys Asn Val Asn 695 700 705 710 | | | 2345 |
| tcc ttc ttt gcc gtc atg ttt ggc ctc agc aac tcg ccc atc agc cgc Ser Phe Phe Ala Val Met Phe Gly Leu Ser Asn Ser Pro Ile Ser Arg 715 720 725 | | | 2393 |

| | | | | | | | | | | | | | | | | |
|------------|------------|-------------|------------|-------------|------------|-----|-----|-----|-----|-----|------------|------------|-----|-----|-----|------|
| cta | gcc | cac | acc | tgg | gag | cgg | ctg | cct | cac | aaa | gtc | cgg | aag | ctg | tac | 2441 |
| Leu | Ala | His | Thr | Trp | Glu | Arg | Leu | Pro | His | Lys | Val | Arg | Lys | Leu | Tyr | |
| | | | 730 | | | | | 735 | | | | | 740 | | | |
| tcc | gcc | ctc | gag | agg | ctg | ctg | gat | ccc | tca | tgg | aac | cac | cgg | gta | tac | 2489 |
| Ser | Ala | Leu | Glu | Arg | Leu | Leu | Asp | Pro | Ser | Trp | Asn | His | Arg | Val | Tyr | |
| | | 745 | | | | | 750 | | | | | 755 | | | | |
| cga | ctg | gcc | ctc | gcc | aag | ctc | tcc | cct | cct | gtc | atc | ccc | ttc | atg | ccc | 2537 |
| Arg | Leu | Ala | Leu | Ala | Lys | Leu | Ser | Pro | Pro | Val | Ile | Pro | Phe | Met | Pro | |
| | 760 | | | | | 765 | | | | | 770 | | | | | |
| ctt | ctt | ctc | aaa | gac | atg | acc | ttc | att | cat | gag | gga | aac | cac | aca | cta | 2585 |
| Leu | Leu | Leu | Lys | Asp | Met | Thr | Phe | Ile | His | Glu | Gly | Asn | His | Thr | Leu | |
| | 775 | | | | | 780 | | | | 785 | | | | | 790 | |
| gtg | gag | aat | ctc | atc | aac | ttt | gag | aag | atg | aga | atg | atg | gcc | aga | gcc | 2633 |
| Val | Glu | Asn | Leu | Ile | Asn | Phe | Glu | Lys | Met | Arg | Met | Met | Ala | Arg | Ala | |
| | | | | 795 | | | | | 800 | | | | | 805 | | |
| gcg | cgg | atg | ctg | cac | cac | tgc | cga | agc | cac | aac | cct | gtg | cct | ctc | tca | 2681 |
| Ala | Arg | Met | Leu | His | His | Cys | Arg | Ser | His | Asn | Pro | Val | Pro | Leu | Ser | |
| | | | 810 | | | | | 815 | | | | | 820 | | | |
| cca | ctc | aga | agc | cga | gtt | tcc | cac | ctc | cac | gag | gac | agc | cag | gtg | gcg | 2729 |
| Pro | Leu | Arg | Ser | Arg | Val | Ser | His | Leu | His | Glu | Asp | Ser | Gln | Val | Ala | |
| | | 825 | | | | | 830 | | | | | 835 | | | | |
| agg | att | tcc | aca | tgc | tcg | gag | cag | tcc | ctg | agc | acc | cgg | agt | cca | gcc | 2777 |
| Arg | Ile | Ser | Thr | Cys | Ser | Glu | Gln | Ser | Leu | Ser | Thr | Arg | Ser | Pro | Ala | |
| | 840 | | | | | 845 | | | | | 850 | | | | | |
| agc | acc | tgg | gct | tat | gtc | cag | cag | ctg | aag | gtc | att | gac | aac | cag | cgg | 2825 |
| Ser | Thr | Trp | Ala | Tyr | Val | Gln | Gln | Leu | Lys | Val | Ile | Asp | Asn | Gln | Arg | |
| | 855 | | | | 860 | | | | | 865 | | | | | 870 | |
| gaa | ctc | tcc | cgc | ctg | tcc | cga | gag | ctg | gag | cca | tgaggagggg | ctgggactgg | | | | 2878 |
| Glu | Leu | Ser | Arg | Leu | Ser | Arg | Glu | Leu | Glu | Pro | | | | | | |
| | | | | 875 | | | | | 880 | | | | | | | |
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| gctggccaca | gctgggcaag | gctctccgtg | gagtggactc | gagtccttg | agcaggcagt | | | | | | | | | | | 2998 |
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 Pro Leu Thr₃₅ Asn Ser Glu Glu Ser Leu Asp Phe Ser Glu₄₅ Ser Leu Glu
 Gln Ala₅₀ Ser Thr Glu Arg Val₅₅ Leu Arg Ala Gly Arg₆₀ Gln Leu His Gln
 His₆₅ Leu Leu Ala Thr Cys₇₀ Pro Asn Leu Ile Arg₇₅ Asp Arg Lys Tyr His₈₀
 Leu Arg Leu Tyr Arg₈₅ Gln Cys Cys Ser Gly₉₀ Arg Glu Leu Val Asp₉₅ Gly
 Ile Leu Ala₁₀₀ Leu Gly Leu Gly Val His₁₀₅ Ser Arg Ser Gln Val Val Gly
 Ile Cys Gln Val Leu Leu Asp Glu₁₂₀ Gly Ala Leu Cys His₁₂₅ Val Lys His
 Asp Trp₁₃₀ Ala Phe Gln Asp Arg₁₃₅ Asp Ala Gln Phe Tyr Arg Phe Pro Gly
 Pro Glu Pro Glu Pro Val₁₅₀ Gly Thr His Glu Met₁₅₅ Glu Glu Glu Leu Ala₁₆₀
 Glu Ala Val Ala Leu₁₆₅ Leu Ser Gln Arg Gly₁₇₀ Pro Asp Ala Leu Leu Thr₁₇₅
 Val Ala Leu Arg₁₈₀ Lys Pro Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp₁₉₀
 Leu Ile Phe₁₉₅ Glu Glu Leu Leu His₂₀₀ Ile Lys Ala Val Ala₂₀₅ His Leu Ser
 Asn Ser₂₁₀ Val Lys Arg Glu Leu₂₁₅ Ala Ala Val Leu Leu Phe Glu Pro His
 Ser Lys Ala Gly Thr Val₂₃₀ Leu Phe Ser Gln Gly₂₃₅ Asp Lys Gly Thr Ser₂₄₀
 Trp Tyr Ile Ile Trp₂₄₅ Lys Gly Ser Val Asn Val Val Thr His Gly₂₅₅ Lys
 Gly Leu Val Thr₂₆₀ Thr Leu His Glu Gly₂₆₅ Asp Asp Phe Gly Gln Leu Ala
 Leu Val Asn₂₇₅ Asp Ala Pro Arg Ala₂₈₀ Ala Thr Ile Ile Leu Arg Glu Tyr
 Asn Cys₂₉₀ His Phe Leu Arg Val₂₉₅ Asp Lys Gln Asp Phe Asn Arg Ile Ile
 Lys Asp Val Glu Ala Lys₃₁₀ Thr Met Arg Leu Glu₃₁₅ Glu His Gly Lys Val₃₂₀
 Val Leu Val Leu Glu₃₂₅ Arg Ala Ser Gln Gly₃₃₀ Ala Gly Pro Ser Arg₃₃₅ Pro
 Pro Thr Pro Gly₃₄₀ Arg Asn Arg Tyr Thr Val Met Ser Gly Thr₃₅₀ Pro Asp
 Lys Ile Leu Glu Leu Leu Leu Glu₃₆₀ Ala Met Gly Leu Asp₃₆₅ Ser Ser Ala
 His Asp Pro Lys Glu Thr Phe₃₇₅ Leu Ser Asp Phe Leu₃₈₀ Leu Thr His Arg

Val Phe Met Pro Ser Ala Gln Leu Cys Ala Ala Leu Leu His His Phe
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His Val Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser Thr Tyr Val
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Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Gln Trp Val Ala
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Leu Tyr Gly Ser Met Leu His Thr Asp Pro Val Ala Thr Ser Phe Leu
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His Lys Leu Ser Asp Leu Val Gly Arg Asp Thr Arg Leu Ser Asn Leu
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Leu Arg Glu Gln Trp Pro Glu Arg Arg Arg Cys His Arg Leu Glu Asn
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Gly Cys Gly Asn Ala Ser Pro Gln Met Lys Ala Arg Asn Leu Pro Val
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Trp Leu Pro Asn Gln Asp Glu Pro Leu Pro Gly Ser Ser Cys Ala Ile
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Gln Val Gly Asp Lys Val Pro Tyr Asp Ile Cys Arg Pro Asp His Ser
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Val Leu Thr Leu Gln Leu Pro Val Thr Ala Ser Val Arg Glu Val Met
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Ala Ala Leu Ala Gln Glu Asp Gly Trp Thr Lys Gly Gln Val Leu Val
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Lys Val Asn Ser Ala Gly Asp Ala Ile Gly Leu Gln Pro Asp Ala Arg
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Gly Val Ala Thr Ser Leu Gly Leu Asn Glu Arg Leu Phe Val Val Asn
580 585 590

Pro Gln Glu Val His Glu Leu Ile Pro His Pro Asp Gln Leu Gly Pro
595 600 605

Thr Val Gly Ser Ala Glu Gly Leu Asp Leu Val Ser Ala Lys Asp Leu
610 615 620

Ala Gly Gln Leu Thr Asp His Asp Trp Ser Leu Phe Asn Ser Ile His
625 630 635 640

Gln Val Glu Leu Ile His Tyr Val Leu Gly Pro Gln His Leu Arg Asp
645 650 655

Val Thr Thr Ala Asn Leu Glu Arg Phe Met Arg Arg Phe Asn Glu Leu
660 665 670

Gln Tyr Trp Val Ala Thr Glu Leu Cys Leu Cys Pro Val Pro Gly Pro
675 680 685

Arg Ala Gln Leu Leu Lys Lys Phe Ile Lys Leu Ala Ala His Leu Lys
690 695 700

Glu Gln Lys Asn Val Asn Ser Phe Phe Ala Val Met Phe Gly Leu Ser
705 710 715 720

Asn Ser Pro Ile Ser Arg Leu Ala His Thr Trp Glu Arg Leu Pro His
725 730 735

Lys Val Arg Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu Asp Pro Ser
740 745 750

Trp Asn His Arg Val Tyr Arg Leu Ala Leu Ala Lys Leu Ser Pro Pro
755 760 765
Val Ile Pro Phe Met Pro Leu Leu Leu Lys Asp Met Thr Phe Ile His
770 775 780
Glu Gly Asn His Thr Leu Val Glu Asn Leu Ile Asn Phe Glu Lys Met
785 790 795 800
Arg Met Met Ala Arg Ala Ala Arg Met Leu His His Cys Arg Ser His
805 810 815
Asn Pro Val Pro Leu Ser Pro Leu Arg Ser Arg Val Ser His Leu His
820 825 830
Glu Asp Ser Gln Val Ala Arg Ile Ser Thr Cys Ser Glu Gln Ser Leu
835 840 845
Ser Thr Arg Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln Gln Leu Lys
850 855 860
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Pro

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ggcaggtggg cctggctgtg gaggatagcc cagctctggg agcaccgcgg gtgggagccc 180
tccctgacgt ggtgccggag gggacactac tcaac atg gtg ttg aga agg atg 233
Met Val Leu Arg Arg Met
1 5
cac cgg ccc cga agc tgc tcc tac cag ctg ctg ctg gag cac cag cat 281
His Arg Pro Arg Ser Cys Ser Tyr Gln Leu Leu Leu Glu His Gln His
10 15 20
ccg agc tgc atc cag ggg ctg cgc tgg aca cca ctc acc aac agc gag 329
Pro Ser Cys Ile Gln Gly Leu Arg Trp Thr Pro Leu Thr Asn Ser Glu
25 30 35
gag tcc ctg gat ttc agc gag agc ctg gag cag gcc tcc aca gag cgg 377
Glu Ser Leu Asp Phe Ser Glu Ser Leu Glu Gln Ala Ser Thr Glu Arg
40 45 50
gtg ctc agg gct ggg agg cag ctg cat cag cat cta ctg gcc acc tgc 425
Val Leu Arg Ala Gly Arg Gln Leu His Gln His Leu Leu Ala Thr Cys
55 60 65 70
cca aac ctc atc cga gac cgg aag tac cac ctt agg ctc tat cgg cag 473
Pro Asn Leu Ile Arg Asp Arg Lys Tyr His Leu Arg Leu Tyr Arg Gln
75 80 85

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| tgc | tgc | tct | ggc | cgg | gag | ctg | gtg | gat | ggg | atc | ttg | gcc | ctg | gga | ctt | 521 |
| Cys | Cys | Ser | Gly | Arg | Glu | Leu | Val | Asp | Gly | Ile | Leu | Ala | Leu | Gly | Leu | |
| | | | 90 | | | | | 95 | | | | | 100 | | | |
| ggg | gtc | cat | tcc | cgg | agc | caa | gtt | gtg | gga | atc | tgc | cag | gtg | ctg | ctg | 569 |
| Gly | Val | His | Ser | Arg | Ser | Gln | Val | Val | Gly | Ile | Cys | Gln | Val | Leu | Leu | |
| | | 105 | | | | | 110 | | | | | 115 | | | | |
| gat | gaa | ggt | gcc | ctc | tgc | cat | gtg | aaa | cac | gac | tgg | gcc | ttc | cag | gac | 617 |
| Asp | Glu | Gly | Ala | Leu | Cys | His | Val | Lys | His | Asp | Trp | Ala | Phe | Gln | Asp | |
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| cga | gat | gcc | caa | ttc | tac | cgg | ttc | ccc | ggg | ccc | gag | ccc | gag | ccc | gtg | 665 |
| Arg | Asp | Ala | Gln | Phe | Tyr | Arg | Phe | Pro | Gly | Pro | Glu | Pro | Glu | Pro | Val | |
| 135 | | | | | 140 | | | | | 145 | | | | | 150 | |
| gga | act | cat | gag | atg | gag | gag | gag | ttg | gcc | gaa | gct | gtg | gcc | ctg | ctc | 713 |
| Gly | Thr | His | Glu | Met | Glu | Glu | Glu | Leu | Ala | Glu | Ala | Val | Ala | Leu | Leu | |
| | | | | 155 | | | | | 160 | | | | | 165 | | |
| tcc | cag | cgg | ggg | cct | gac | gcc | ctg | ctc | act | gtg | gca | ctt | cga | aag | ccc | 761 |
| Ser | Gln | Arg | Gly | Pro | Asp | Ala | Leu | Leu | Thr | Val | Ala | Leu | Arg | Lys | Pro | |
| | | | 170 | | | | | 175 | | | | | 180 | | | |
| cca | ggt | cag | cgc | acg | gat | gaa | gag | ctg | gac | ctc | atc | ttt | gag | gag | ctg | 809 |
| Pro | Gly | Gln | Arg | Thr | Asp | Glu | Glu | Leu | Asp | Leu | Ile | Phe | Glu | Glu | Leu | |
| | | 185 | | | | | 190 | | | | | 195 | | | | |
| ctg | cac | atc | aag | gct | gtg | gcc | cac | ctc | tcc | aac | tcg | gtg | aag | cga | gaa | 857 |
| Leu | His | Ile | Lys | Ala | Val | Ala | His | Leu | Ser | Asn | Ser | Val | Lys | Arg | Glu | |
| | | | | | | 205 | | | | | 210 | | | | | |
| tta | gcg | gct | gtt | ctg | ctc | ttt | gaa | cca | cac | agc | aag | gca | ggg | acc | gtg | 905 |
| Leu | Ala | Ala | Val | Leu | Leu | Phe | Glu | Pro | His | Ser | Lys | Ala | Gly | Thr | Val | |
| 215 | | | | | 220 | | | | | 225 | | | | | 230 | |
| ttg | ttc | agc | cag | ggg | gac | aag | ggc | act | tcg | tgg | tac | att | atc | tgg | aag | 953 |
| Leu | Phe | Ser | Gln | Gly | Asp | Lys | Gly | Thr | Ser | Trp | Tyr | Ile | Ile | Trp | Lys | |
| | | | | 235 | | | | | 240 | | | | | 245 | | |
| gga | tct | gtc | aac | gtg | gtg | acc | cat | ggc | aag | ggg | ctg | gtg | acc | acc | ctg | 1001 |
| Gly | Ser | Val | Asn | Val | Val | Thr | His | Gly | Lys | Gly | Leu | Val | Thr | Thr | Leu | |
| | | | 250 | | | | | 255 | | | | | 260 | | | |
| cat | gag | gga | gat | gat | ttt | gga | cag | ctg | gct | ctg | gtg | aat | gat | gca | ccc | 1049 |
| His | Glu | Gly | Asp | Asp | Phe | Gly | Gln | Leu | Ala | Leu | Val | Asn | Asp | Ala | Pro | |
| | | 265 | | | | | 270 | | | | | 275 | | | | |
| cgg | gca | gcc | acc | atc | atc | ctg | cga | gaa | tac | aac | tgt | cat | ttc | ctg | cgt | 1097 |
| Arg | Ala | Ala | Thr | Ile | Ile | Leu | Arg | Glu | Tyr | Asn | Cys | His | Phe | Leu | Arg | |
| | | 280 | | | | 285 | | | | | 290 | | | | | |
| gtg | gac | aag | cag | gac | ttc | aac | cgt | atc | atc | aag | gat | gtg | gag | gca | aag | 1145 |
| Val | Asp | Lys | Gln | Asp | Phe | Asn | Arg | Ile | Ile | Lys | Asp | Val | Glu | Ala | Lys | |
| 295 | | | | | 300 | | | | | 305 | | | | | 310 | |
| acc | atg | cgg | ctg | gaa | gaa | cat | ggc | aaa | gtg | gtg | ctg | gtg | ctg | gag | aga | 1193 |
| Thr | Met | Arg | Leu | Glu | Glu | His | Gly | Lys | Val | Val | Leu | Val | Leu | Glu | Arg | |
| | | | | 315 | | | | | 320 | | | | | 325 | | |
| gcc | tct | cag | ggc | gcc | ggc | cct | tcc | cga | ccc | cca | acc | cca | ggc | agg | aac | 1241 |
| Ala | Ser | Gln | Gly | Ala | Gly | Pro | Ser | Arg | Pro | Pro | Thr | Pro | Gly | Arg | Asn | |
| | | | 330 | | | | | 335 | | | | | 340 | | | |
| cgg | tat | aca | gtg | atg | tct | ggc | act | cca | gat | aag | atc | cta | gag | ctt | ctg | 1289 |
| Arg | Tyr | Thr | Val | Met | Ser | Gly | Thr | Pro | Asp | Lys | Ile | Leu | Glu | Leu | Leu | |
| | | 345 | | | | | 350 | | | | | 355 | | | | |
| ttg | gag | gcc | atg | gga | cta | gat | tcc | agt | gct | cat | gac | cca | aaa | gaa | aca | 1337 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|------------|------------|------------|-----|-----|-----|-----|-----|-----|-----|------|
| Leu | Glu | Ala | Met | Gly | Leu | Asp | Ser | Ser | Ala | His | Asp | Pro | Lys | Glu | Thr | |
| 360 | | | | | | 365 | | | | | 370 | | | | | |
| ttc | ctc | agc | gac | ttc | ctc | ctg | acc | cac | agg | gtc | ttc | atg | ccc | agc | gcc | 1385 |
| Phe | Leu | Ser | Asp | Phe | Leu | Leu | Thr | His | Arg | Val | Phe | Met | Pro | Ser | Ala | |
| 375 | | | | | 380 | | | | | 385 | | | | | 390 | |
| caa | ctc | tgc | gct | gcc | ctt | ctg | cac | cac | ttc | cat | gtg | gag | cct | gcg | ggg | 1433 |
| Gln | Leu | Cys | Ala | Ala | Leu | Leu | His | His | Phe | His | Val | Glu | Pro | Ala | Gly | |
| | | | | 395 | | | | | 400 | | | | | 405 | | |
| ggc | agc | gag | cag | gag | cgc | agc | acc | tac | gtc | tgc | aac | aag | agg | cag | cag | 1481 |
| Gly | Ser | Glu | Gln | Glu | Arg | Ser | Thr | Tyr | Val | Cys | Asn | Lys | Arg | Gln | Gln | |
| | | | 410 | | | | | 415 | | | | | 420 | | | |
| atc | ttg | cgg | ctg | gtc | agc | cag | tgg | gtg | gcc | ctg | tat | ggc | tcc | atg | ctc | 1529 |
| Ile | Leu | Arg | Leu | Val | Ser | Gln | Trp | Val | Ala | Leu | Tyr | Gly | Ser | Met | Leu | |
| | | 425 | | | | | 430 | | | | | 435 | | | | |
| cac | act | gac | cct | gtg | gcc | acc | agc | ttc | ctc | cag | aaa | ctc | tca | gac | ctg | 1577 |
| His | Thr | Asp | Pro | Val | Ala | Thr | Ser | Phe | Leu | Gln | Lys | Leu | Ser | Asp | Leu | |
| | 440 | | | | | 445 | | | | | 450 | | | | | |
| gtg | ggc | agg | gac | acc | cga | ctc | agc | aac | ctg | ctg | agg | gag | cag | tgg | cca | 1625 |
| Val | Gly | Arg | Asp | Thr | Arg | Leu | Ser | Asn | Leu | Leu | Arg | Glu | Gln | Trp | Pro | |
| 455 | | | | | 460 | | | | | 465 | | | | | 470 | |
| gag | agg | cgg | cga | tgc | cac | agg | ttg | gag | aat | ggc | tgt | ggg | aat | gca | tct | 1673 |
| Glu | Arg | Arg | Arg | Cys | His | Arg | Leu | Glu | Asn | Gly | Cys | Gly | Asn | Ala | Ser | |
| | | | | 475 | | | | | 480 | | | | | 485 | | |
| cct | cag | atg | aag | gtg | tct | gcc | tgg | ccc | cag | ttt | ctt | tcc | tct | gct | cct | 1721 |
| Pro | Gln | Met | Lys | Val | Ser | Ala | Trp | Pro | Gln | Phe | Leu | Ser | Ser | Ala | Pro | |
| | | | 490 | | | | | 495 | | | | | 500 | | | |
| cct | gga | ctg | cag | gca | cct | cct | tcg | ccc | cct | gac | cct | gag | ggg | ctc | tgt | 1769 |
| Pro | Gly | Leu | Gln | Ala | Pro | Pro | Ser | Pro | Pro | Asp | Pro | Glu | Gly | Leu | Cys | |
| | | 505 | | | | | 510 | | | | | 515 | | | | |
| ggg | cgt | ggg | aag | ctc | tcc | tcc | cac | aga | cac | acc | ctt | ggg | tct | ctg | ata | 1817 |
| Gly | Arg | Gly | Lys | Leu | Ser | Ser | His | Arg | His | Thr | Leu | Gly | Ser | Leu | Ile | |
| | 520 | | | | | 525 | | | | | 530 | | | | | |
| ggt | gtt | cac | ggg | gcc | ctt | gct | gca | tgt | ggt | gcc | ctg | ggc | cag | gcc | gtg | 1865 |
| Gly | Val | His | Gly | Ala | Leu | Ala | Ala | Cys | Gly | Ala | Leu | Gly | Gln | Ala | Val | |
| 535 | | | | | 540 | | | | | 545 | | | | | 550 | |
| cca | gga | ggc | gca | gag | gcc | taaggtggcc | tcctctctcg | cccactccct | | | | | | | | 1913 |
| Pro | Gly | Gly | Ala | Glu | Ala | | | | | | | | | | | |
| | | | | 555 | | | | | | | | | | | | |

| | | | | | | |
|------------|------------|------------|------------|------------|------------|------|
| gactcaatgg | gccttttatt | ccttttgga | ggtaattcat | gcccacaggt | agagcctggg | 1973 |
| agatgaggaa | tggtggctgg | agttggcccc | tgaggccac | ggggctcctg | gtggccagt | 2033 |
| ctgtgggagc | tcagaggaag | gcgaggcccc | tccttgaaa | gtcagagggg | gccccaggcc | 2093 |
| attctcagct | ggggcttaaa | gggaagcaaa | gaggggatga | gaagatgtga | ctgcagccag | 2153 |
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35 40 45
Gln Ala Ser Thr Glu Arg Val Leu Arg Ala Gly Arg Gln Leu His Gln
50 55 60
His Leu Leu Ala Thr Cys Pro Asn Leu Ile Arg Asp Arg Lys Tyr His
65 70 75 80
Leu Arg Leu Tyr Arg Gln Cys Cys Ser Gly Arg Glu Leu Val Asp Gly
85 90 95
Ile Leu Ala Leu Gly Leu Gly Val His Ser Arg Ser Gln Val Val Gly
100 105 110
Ile Cys Gln Val Leu Leu Asp Glu Gly Ala Leu Cys His Val Lys His
115 120 125
Asp Trp Ala Phe Gln Asp Arg Asp Ala Gln Phe Tyr Arg Phe Pro Gly
130 135 140
Pro Glu Pro Glu Pro Val Gly Thr His Glu Met Glu Glu Glu Leu Ala
145 150 155 160
Glu Ala Val Ala Leu Leu Ser Gln Arg Gly Pro Asp Ala Leu Leu Thr
165 170 175
Val Ala Leu Arg Lys Pro Pro Gly Gln Arg Thr Asp Glu Glu Leu Asp
180 185 190
Leu Ile Phe Glu Glu Leu Leu His Ile Lys Ala Val Ala His Leu Ser
195 200 205
Asn Ser Val Lys Arg Glu Leu Ala Ala Val Leu Leu Phe Glu Pro His
210 215 220
Ser Lys Ala Gly Thr Val Leu Phe Ser Gln Gly Asp Lys Gly Thr Ser
225 230 235 240
Trp Tyr Ile Ile Trp Lys Gly Ser Val Asn Val Val Thr His Gly Lys
245 250 255
Gly Leu Val Thr Thr Leu His Glu Gly Asp Asp Phe Gly Gln Leu Ala
260 265 270
Leu Val Asn Asp Ala Pro Arg Ala Ala Thr Ile Ile Leu Arg Glu Tyr
275 280 285
Asn Cys His Phe Leu Arg Val Asp Lys Gln Asp Phe Asn Arg Ile Ile
290 295 300
Lys Asp Val Glu Ala Lys Thr Met Arg Leu Glu Glu His Gly Lys Val
305 310 315 320
Val Leu Val Leu Glu Arg Ala Ser Gln Gly Ala Gly Pro Ser Arg Pro
325 330 335
Pro Thr Pro Gly Arg Asn Arg Tyr Thr Val Met Ser Gly Thr Pro Asp
340 345 350
Lys Ile Leu Glu Leu Leu Leu Glu Ala Met Gly Leu Asp Ser Ser Ala
355 360 365
His Asp Pro Lys Glu Thr Phe Leu Ser Asp Phe Leu Leu Thr His Arg
370 375 380
Val Phe Met Pro Ser Ala Gln Leu Cys Ala Ala Leu Leu His His Phe
385 390 395 400

His Val Glu Pro Ala Gly Gly Ser Glu Gln Glu Arg Ser Thr Tyr Val
 405 410 415
 Cys Asn Lys Arg Gln Gln Ile Leu Arg Leu Val Ser Gln Trp Val Ala
 420 425 430
 Leu Tyr Gly Ser Met Leu His Thr Asp Pro Val Ala Thr Ser Phe Leu
 435 440 445
 Gln Lys Leu Ser Asp Leu Val Gly Arg Asp Thr Arg Leu Ser Asn Leu
 450 455 460
 Leu Arg Glu Gln Trp Pro Glu Arg Arg Arg Cys His Arg Leu Glu Asn
 465 470 475 480
 Gly Cys Gly Asn Ala Ser Pro Gln Met Lys Val Ser Ala Trp Pro Gln
 485 490 495
 Phe Leu Ser Ser Ala Pro Pro Gly Leu Gln Ala Pro Pro Ser Pro Pro
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 Asp Pro Glu Gly Leu Cys Gly Arg Gly Lys Leu Ser Ser His Arg His
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 Ile Asn Gly Arg Leu Phe Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu 20 25 30
 act ccc ttg cca gaa cag gag ggc ccg acc act ggg aca gtg ggg acg 143
 Thr Pro Leu Pro Glu Gln Glu Gly Pro Thr Thr Gly Thr Val Gly Thr 35 40 45
 ttt gaa ctg atg agc tcg aaa gac ttg gcg tac cag atg aca acg tat 191
 Phe Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Thr Tyr 50 55 60
 gac tgg gaa ctc ttc aac tgt gtg ctc gag ctg gag cta atc tac cac 239
 Asp Trp Glu Leu Phe Asn Cys Val Leu Glu Leu Glu Leu Ile Tyr His 65 70 75
 aca ttt gga agg cat aat ttt aaa aag acc aca gca aac ttg gat ttg 287
 Thr Phe Gly Arg His Asn Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu 80 85 90 95
 ttc ctg agg aga ttt aat gaa att cag ttt tgg gtt gtc act gag atc 335
 Phe Leu Arg Arg Phe Asn Glu Ile Gln Phe Trp Val Val Thr Glu Ile 100 105 110

| | |
|--|------|
| tgc ctt tgt tcc cag ctc agc aag cgt gtt cag ctt ttg aaa aaa tgt | 383 |
| Cys Leu Cys Ser Gln Leu Ser Lys Arg Val Gln Leu Leu Lys Lys Cys | |
| 115 120 125 | |
| atc aag ata gcg gct cac tgc aag gag tac aaa aac ttg aat tcc ttc | 431 |
| Ile Lys Ile Ala Ala His Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe | |
| 130 135 140 | |
| ttc ggc atc gtc atg ggg ctc agt aac gtg gct gag agc cgc ctg gca | 479 |
| Phe Gly Ile Val Met Gly Leu Ser Asn Val Ala Glu Ser Arg Leu Ala | |
| 145 150 155 | |
| tta aca tgg gag aaa ctg ccg agc aag ttt aag aag ttc tat gcg gag | 527 |
| Leu Thr Trp Glu Lys Leu Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu | |
| 160 165 170 175 | |
| ttt gag agc tta atg gat cct tcc aga aat cac aag gcg tac agg ctg | 575 |
| Phe Glu Ser Leu Met Asp Pro Ser Arg Asn His Lys Ala Tyr Arg Leu | |
| 180 185 190 | |
| aca gca gct aaa ctg gag ccc ccc ctc atc cct ttc atg ccc ttg ctt | 623 |
| Thr Ala Ala Lys Leu Glu Pro Pro Leu Ile Pro Phe Met Pro Leu Leu | |
| 195 200 205 | |
| att aaa gat atg aca ttt act cat gag ggg aac aag aca ttc att gac | 671 |
| Ile Lys Asp Met Thr Phe Thr His Glu Gly Asn Lys Thr Phe Ile Asp | |
| 210 215 220 | |
| aat cta gta aac ttt gaa aaa atg cgc atg att gca aat act gcc aga | 719 |
| Asn Leu Val Asn Phe Glu Lys Met Arg Met Ile Ala Asn Thr Ala Arg | |
| 225 230 235 | |
| acg gtg cgc tac tac agg agc cag cca ttc aat ccg gat gct gct caa | 767 |
| Thr Val Arg Tyr Tyr Arg Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln | |
| 240 245 250 255 | |
| gct aat aag aac cat cag gat gtc cgg agt tat gta cgg caa tta aat | 815 |
| Ala Asn Lys Asn His Gln Asp Val Arg Ser Tyr Val Arg Gln Leu Asn | |
| 260 265 270 | |
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| Val Ile Asp Asn Gln Arg Thr Leu Ser Gln Met Ser His Arg Leu Glu | |
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| cct cgc agg cca tagacatctg cagtgccag agtgatgctc cgtctccagt | 915 |
| Pro Arg Arg Pro | |
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| ccacacagga gaaggatctg tcttgtctaa cgcggacatg ccgtagctta ggaaccatca | 1095 |
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| ggcgagggcta caccaggccc ctgacatccc ttcccaggct gttgcagcat gagactgtcc | 1215 |
| cgtggatagg tttgacttgg aatcgctgca atgatataat tgaatgattt gtttacttag | 1275 |
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 Glu Leu Met Ser Ser Lys Asp Leu Ala Tyr Gln Met Thr Thr Tyr Asp
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 Trp Glu Leu Phe Asn Cys Val Leu Glu Leu Glu Ile Tyr His Thr
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 Phe Gly Arg His Asn Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu Phe
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 Leu Cys Ser Gln Leu Ser Lys Arg Val Gln Leu Leu Lys Lys Cys Ile
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 Lys Ile Ala Ala His Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe Phe
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 Gly Ile Val Met Gly Leu Ser Asn Val Ala Glu Ser Arg Leu Ala Leu
 145 150 155 160
 Thr Trp Glu Lys Leu Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu Phe
 165 170 175
 Glu Ser Leu Met Asp Pro Ser Arg Asn His Lys Ala Tyr Arg Leu Thr
 180 185 190
 Ala Ala Lys Leu Glu Pro Pro Leu Ile Pro Phe Met Pro Leu Leu Ile
 195 200 205
 Lys Asp Met Thr Phe Thr His Glu Gly Asn Lys Thr Phe Ile Asp Asn
 210 215 220
 Leu Val Asn Phe Glu Lys Met Arg Met Ile Ala Asn Thr Ala Arg Thr
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 Val Arg Tyr Tyr Arg Ser Gln Pro Phe Asn Pro Asp Ala Ala Gln Ala

245 250 255
 Asn Lys Asn His Gln Asp Val Arg Ser Tyr Val Arg Gln Leu Asn Val
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 Met Val Leu
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 Trp Lys 5 Arg Ala Leu Thr Met Thr Gly Phe Leu Thr Arg Arg Thr His
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 att ctc tct cga gca cct cac atg ata aga gat aga aaa tac cac cta 607
 Ile Leu Ser Arg Ala Pro His Met Ile Arg Asp Arg Lys Tyr His Leu
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 aag aca tac aga caa tgc tgt gtg gga act gaa ctg gtg gac tgg atg 655
 Lys Thr Tyr Arg Gln Cys Cys Val Gly Thr Glu Leu Val Asp Trp Met
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 atc gac gag aca cca tgt gtt cac tcc cgg act caa gct gtt ggc atg 703
 Ile Asp Glu Thr Pro Cys Val His Ser Arg Thr Gln Ala Val Gly Met
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 tgg caa gtc ctg tta gaa gat ggt gtt ctc aac cac gtg gac cag gag 751
 Trp Gln Val Leu Leu Glu Asp Gly Val Leu Asn His Val Asp Gln Glu
 100 105 110 115
 cac cat ttc caa gac ttt tat tta ttc tat cga ttt ctg gat gat gag 799
 His His Phe Gln Asp Phe Tyr Leu Phe Tyr Arg Phe Leu Asp Asp Glu

| 120 | | | | | | | | 125 | | | | | 130 | | | | | |
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| gag Glu | gag Glu | ctc Leu 150 | cag Gln | gac Asp | acc Thr | atg Met | ctg Leu 155 | ctg Leu | ctg Leu | tca Ser | cag Gln | atg Met 160 | ggc Gly | ccc Pro | gac Asp | 895 | | |
| gcc Ala | cac His 165 | atg Met | agg Arg | atg Met | atc Ile | ctt Leu 170 | cgc Arg | aaa Lys | cca Pro | cct Pro | ggc Gly 175 | cag Gln | agg Arg | act Thr | gtg Val | 943 | | |
| gat Asp 180 | gac Asp | cta Leu | gag Glu | att Ile | atc Ile 185 | tat Tyr | gag Glu | gag Glu | ctt Leu | ctt Leu 190 | cat His | att Ile | aaa Lys | gcc Ala | tta Leu 195 | 991 | | |
| tcc Ser | cat His | ctt Leu | tct Ser | acc Thr 200 | aca Thr | gtg Val | aaa Lys | cga Arg | gag Glu 205 | tta Leu | gca Ala | ggt Gly | gtt Val | ctc Leu 210 | att Ile | 1039 | | |
| ttt Phe | gag Glu | tct Ser | cac His 215 | gcc Ala | aaa Lys | gga Gly | ggg Gly | act Thr 220 | gtg Val | ttg Leu | ttt Phe | aac Asn | cag Gln 225 | ggg Gly | gaa Glu | 1087 | | |
| gaa Glu | ggt Gly | acc Thr 230 | tcc Ser | tgg Trp | tac Tyr | att Ile | att Ile 235 | cta Leu | aaa Lys | gga Gly | tca Ser | gtg Val 240 | aat Asn | gta Val | gtc Val | 1135 | | |
| att Ile | tac Tyr 245 | ggc Gly | aag Lys | ggt Gly | gtg Val | gtc Val 250 | tgc Cys | acc Thr | ctg Leu | cat His | gaa Glu 255 | gga Gly | gat Asp | gac Asp | ttc Phe | 1183 | | |
| ggc Gly 260 | aag Lys | tta Leu | gca Ala | cta Leu | gtg Val 265 | aat Asn | gat Asp | gcc Ala | cca Pro | cga Arg 270 | gct Ala | gcc Ala | tct Ser | atc Ile | gtc Val 275 | 1231 | | |
| tta Leu | cga Arg | gaa Glu | gat Asp | aac Asn 280 | tgc Cys | cat His | ttc Phe | tta Leu | aga Arg 285 | gta Val | gac Asp | aag Lys | gag Glu | gat Asp 290 | ttc Phe | 1279 | | |
| aac Asn | cgg Arg | atc Ile | cta Leu 295 | agg Arg | gac Asp | gtg Val | gag Glu | gcg Ala 300 | aat Asn | aca Thr | gtc Val | aga Arg | ctt Leu 305 | aaa Lys | gaa Glu | 1327 | | |
| cat His | gac Asp | caa Gln 310 | gat Asp | gtc Val | ttg Leu | gtg Val | ctg Leu 315 | gag Glu | aag Lys | gtc Val | cca Pro | gca Ala 320 | ggg Gly | aac Asn | aga Arg | 1375 | | |
| gct Ala | tct Ser 325 | aat Asn | caa Gln | gga Gly | aac Asn | tca Ser 330 | cag Gln | cct Pro | cag Gln | caa Gln | aag Lys 335 | tat Tyr | act Thr | gtg Val | atg Met | 1423 | | |
| tca Ser 340 | gga Gly | aca Thr | cct Pro | gaa Glu | aaa Lys 345 | att Ile | tta Leu | gag Glu | cat His | ttt Phe 350 | cta Leu | gaa Glu | aca Thr | ata Ile | cgc Arg 355 | 1471 | | |
| ctt Leu | gag Glu | gca Ala | act Thr | tta Leu 360 | aat Asn | gaa Glu | gca Ala | aca Thr | gat Asp 365 | tct Ser | gtt Val | tta Leu | aat Asn | gac Asp 370 | ttt Phe | 1519 | | |
| att Ile | atg Met | atg Met | cac His 375 | tgt Cys | gtt Val | ttt Phe | atg Met | cca Pro 380 | aat Asn | acc Thr | cag Gln | ctt Leu | tgc Cys 385 | ccg Pro | gca Ala | 1567 | | |
| ctg Leu | gtg Val | gcc Ala 390 | cac His | tac Tyr | cac His | gca Ala | cag Gln 395 | cct Pro | tca Ser | caa Gln | ggt Gly | aca Thr 400 | gaa Glu | cag Gln | gag Glu | 1615 | | |

| | |
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| aaa atg gat tat gcc ctc aac aat aag agg cga gtc atc cgc ctg gtt Lys Met Asp Tyr Ala Leu Asn Asn Lys Arg Arg Val Ile Arg Leu Val 405 410 415 | 1663 |
| cta cag tgg gct gcc atg tat gga gac ctc ctg caa gag gat gac gta Leu Gln Trp Ala Ala Met Tyr Gly Asp Leu Leu Gln Glu Asp Asp Val 420 425 430 435 | 1711 |
| tct atg gcc ttc ctg gag gag ttt tat gta tct gta tca gat gat gcc Ser Met Ala Phe Leu Glu Glu Phe Tyr Val Ser Val Ser Asp Asp Ala 440 445 450 | 1759 |
| cgg atg att gct gcc ctc aag gag caa ctg cca gag ttg gag aag att Arg Met Ile Ala Ala Leu Lys Glu Gln Leu Pro Glu Leu Glu Lys Ile 455 460 465 | 1807 |
| gtc aag caa atc tca gaa gat gca aag gca cca caa aag aag cac aag Val Lys Gln Ile Ser Glu Asp Ala Lys Ala Pro Gln Lys Lys His Lys 470 475 480 | 1855 |
| gtt ctt ttg caa cag ttc aat acg ggc gat gag aga gcc cag aag cgc Val Leu Leu Gln Gln Phe Asn Thr Gly Asp Glu Arg Ala Gln Lys Arg 485 490 495 | 1903 |
| cag cct atc cgc ggc tct gat gaa gtt ctg ttt aag gtc tat tgc atg Gln Pro Ile Arg Gly Ser Asp Glu Val Leu Phe Lys Val Tyr Cys Met 500 505 510 515 | 1951 |
| gac cac acc tac aca acc att cgg gtg cca gtg gcc act tcg gtg aag Asp His Thr Tyr Thr Thr Ile Arg Val Pro Val Ala Thr Ser Val Lys 520 525 530 | 1999 |
| gaa gtc atc agt gca gtt gcc gac aag ctg ggc tcc ggg gag ggc ctg Glu Val Ile Ser Ala Val Ala Asp Lys Leu Gly Ser Gly Glu Gly Leu 535 540 545 | 2047 |
| atc ata gtc aag atg agt tcc gga gga gaa aag gtg gtg ctc aaa cct Ile Ile Val Lys Met Ser Ser Gly Gly Glu Lys Val Val Leu Lys Pro 550 555 560 | 2095 |
| aat gat gtt tca gta ttt acg acg ctc acc att aat gga cgc ctg ttt Asn Asp Val Ser Val Phe Thr Thr Leu Thr Ile Asn Gly Arg Leu Phe 565 570 575 | 2143 |
| gct tgc ccg cga gag caa ttc gat tca ctg act ccc tta cca gaa cag Ala Cys Pro Arg Glu Gln Phe Asp Ser Leu Thr Pro Leu Pro Glu Gln 580 585 590 595 | 2191 |
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| aaa gat tta gca tac cag atg aca att tat gat tgg gaa ctc ttc aac Lys Asp Leu Ala Tyr Gln Met Thr Ile Tyr Asp Trp Glu Leu Phe Asn 615 620 625 | 2287 |
| tgc gtg cat gag ctg gag cta atc tat cac aca ttt gga agg cat aat Cys Val His Glu Leu Glu Leu Ile Tyr His Thr Phe Gly Arg His Asn 630 635 640 | 2335 |
| ttt aaa aag acc aca gca aac ttg gat ttg ttc ctg agg aga ttt aat Phe Lys Lys Thr Thr Ala Asn Leu Asp Leu Phe Leu Arg Arg Phe Asn 645 650 655 | 2383 |
| gaa att cag ttt tgg gtc gtc act gag atc tgc ctt tgt tct cag ctc Glu Ile Gln Phe Trp Val Val Thr Glu Ile Cys Leu Cys Ser Gln Leu 660 665 670 675 | 2431 |

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Ser Lys Arg Val Gln Leu Leu Lys Lys Phe Ile Lys Ile Ala Ala His
680 685 690

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Cys Lys Glu Tyr Lys Asn Leu Asn Ser Phe Phe Ala Ile Val Met Gly
695 700 705

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Leu Ser Asn Ile Ala Val Ser Arg Leu Ala Leu Thr Trp Glu Lys Leu
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Pro Ser Lys Phe Lys Lys Phe Tyr Ala Glu Phe Glu Ser Leu Met Asp
725 730 735

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Pro Ser Arg Asn His Arg Ala Tyr Arg Leu Thr Val Ala Lys Leu Glu
740 745 750 755

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760 765 770

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Thr His Glu Gly Asn Lys Thr Phe Ile Asp Asn Leu Val Asn Phe Glu
775 780 785

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Lys Met Arg Met Ile Ala Asn Thr Ala Arg Thr Val Arg Tyr Tyr Arg
790 795 800

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805 810 815

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Asp Val Arg Ser Tyr Val Arg Gln Leu Asn Val Ile Asp Asn Gln Arg
820 825 830 835

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35 40 45
Arg Asn Ala Ile Leu Ser Arg Ala Pro His Met Ile Arg Asp Arg Lys
50 55 60
Tyr His Leu Lys Thr Tyr Arg Gln Cys Cys Val Gly Thr Glu Leu Val
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Asp Trp Met Ile Asp Glu Thr Pro Cys Val His Ser Arg Thr Gln Ala

| 85 | | | | | 90 | | | | | 95 | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Gly | Met | Trp | Gln | Val | Leu | Leu | Glu | Asp | Gly | Val | Leu | Asn | His | Val |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Asp | Gln | Glu | His | His | Phe | Gln | Asp | Phe | Tyr | Leu | Phe | Tyr | Arg | Phe | Leu |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Asp | Asp | Glu | His | Glu | Asp | Ala | Pro | Leu | Pro | Thr | Glu | Glu | Lys | Lys | |
| | | 130 | | | | 135 | | | | | 140 | | | | |
| Glu | Cys | Asp | Glu | Glu | Leu | Gln | Asp | Thr | Met | Leu | Leu | Leu | Ser | Gln | Met |
| | | | | 150 | | | | | | | 155 | | | | 160 |
| Gly | Pro | Asp | Ala | His | Met | Arg | Met | Ile | Leu | Arg | Lys | Pro | Pro | Gly | Gln |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| Arg | Thr | Val | Asp | Asp | Leu | Glu | Ile | Ile | Tyr | Glu | Glu | Leu | Leu | His | Ile |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Lys | Ala | Leu | Ser | His | Leu | Ser | Thr | Thr | Val | Lys | Arg | Glu | Leu | Ala | Gly |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Val | Leu | Ile | Phe | Glu | Ser | His | Ala | Lys | Gly | Gly | Thr | Val | Leu | Phe | Asn |
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| Gln | Gly | Glu | Glu | Gly | Thr | Ser | Trp | Tyr | Ile | Ile | Leu | Lys | Gly | Ser | Val |
| | | | | 230 | | | | | | | 235 | | | | 240 |
| Asn | Val | Val | Ile | Tyr | Gly | Lys | Gly | Val | Val | Cys | Thr | Leu | His | Glu | Gly |
| | | | | 245 | | | | | 250 | | | | | 255 | |
| Asp | Asp | Phe | Gly | Lys | Leu | Ala | Leu | Val | Asn | Asp | Ala | Pro | Arg | Ala | Ala |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Ser | Ile | Val | Leu | Arg | Glu | Asp | Asn | Cys | His | Phe | Leu | Arg | Val | Asp | Lys |
| | | 275 | | | | | 280 | | | | | 285 | | | |
| Glu | Asp | Phe | Asn | Arg | Ile | Leu | Arg | Asp | Val | Glu | Ala | Asn | Thr | Val | Arg |
| | | 290 | | | | 295 | | | | | 300 | | | | |
| Leu | Lys | Glu | His | Asp | Gln | Asp | Val | Leu | Val | Leu | Glu | Lys | Val | Pro | Ala |
| | | | | 310 | | | | | | | 315 | | | | 320 |
| Gly | Asn | Arg | Ala | Ser | Asn | Gln | Gly | Asn | Ser | Gln | Pro | Gln | Gln | Lys | Tyr |
| | | | | 325 | | | | | 330 | | | | | 335 | |
| Thr | Val | Met | Ser | Gly | Thr | Pro | Glu | Lys | Ile | Leu | Glu | His | Phe | Leu | Glu |
| | | | 340 | | | | | 345 | | | | | 350 | | |
| Thr | Ile | Arg | Leu | Glu | Ala | Thr | Leu | Asn | Glu | Ala | Thr | Asp | Ser | Val | Leu |
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| Asn | Asp | Phe | Ile | Met | Met | His | Cys | Val | Phe | Met | Pro | Asn | Thr | Gln | Leu |
| | | 370 | | | | 375 | | | | | 380 | | | | |
| Cys | Pro | Ala | Leu | Val | Ala | His | Tyr | His | Ala | Gln | Pro | Ser | Gln | Gly | Thr |
| | | | | 390 | | | | | | | 395 | | | | 400 |
| Glu | Gln | Glu | Lys | Met | Asp | Tyr | Ala | Leu | Asn | Asn | Lys | Arg | Arg | Val | Ile |
| | | | | 405 | | | | | 410 | | | | | 415 | |
| Arg | Leu | Val | Leu | Gln | Trp | Ala | Ala | Met | Tyr | Gly | Asp | Leu | Leu | Gln | Glu |
| | | | 420 | | | | | 425 | | | | | 430 | | |
| Asp | Asp | Val | Ser | Met | Ala | Phe | Leu | Glu | Glu | Phe | Tyr | Val | Ser | Val | Ser |
| | | 435 | | | | | 440 | | | | | 445 | | | |
| Asp | Asp | Ala | Arg | Met | Ile | Ala | Ala | Leu | Lys | Glu | Gln | Leu | Pro | Glu | Leu |

| 450 | | | | | 455 | | | | | 460 | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Lys | Ile | Val | Lys | Gln | Ile | Ser | Glu | Asp | Ala | Lys | Ala | Pro | Gln | Lys |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| Lys | His | Lys | Val | Leu | Leu | Gln | Gln | Phe | Asn | Thr | Gly | Asp | Glu | Arg | Ala |
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| Gln | Lys | Arg | Gln | Pro | Ile | Arg | Gly | Ser | Asp | Glu | Val | Leu | Phe | Lys | Val |
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| Tyr | Cys | Met | Asp | His | Thr | Tyr | Thr | Thr | Ile | Arg | Val | Pro | Val | Ala | Thr |
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| Ser | Val | Lys | Glu | Val | Ile | Ser | Ala | Val | Ala | Asp | Lys | Leu | Gly | Ser | Gly |
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| Glu | Gly | Leu | Ile | Ile | Val | Lys | Met | Ser | Ser | Gly | Gly | Glu | Lys | Val | Val |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| Leu | Lys | Pro | Asn | Asp | Val | Ser | Val | Phe | Thr | Thr | Leu | Thr | Ile | Asn | Gly |
| | | | | 565 | | | | | 570 | | | | | 575 | |
| Arg | Leu | Phe | Ala | Cys | Pro | Arg | Glu | Gln | Phe | Asp | Ser | Leu | Thr | Pro | Leu |
| | | | 580 | | | | | 585 | | | | | | 590 | |
| Pro | Glu | Gln | Glu | Gly | Pro | Thr | Val | Gly | Thr | Val | Gly | Thr | Phe | Glu | Leu |
| | | | 595 | | | | 600 | | | | | 605 | | | |
| Met | Ser | Ser | Lys | Asp | Leu | Ala | Tyr | Gln | Met | Thr | Ile | Tyr | Asp | Trp | Glu |
| | 610 | | | | | 615 | | | | | 620 | | | | |
| Leu | Phe | Asn | Cys | Val | His | Glu | Leu | Glu | Leu | Ile | Tyr | His | Thr | Phe | Gly |
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| Arg | His | Asn | Phe | Lys | Lys | Thr | Thr | Ala | Asn | Leu | Asp | Leu | Phe | Leu | Arg |
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| Ser | Gln | Leu | Ser | Lys | Arg | Val | Gln | Leu | Leu | Lys | Lys | Phe | Ile | Lys | Ile |
| | | 675 | | | | | 680 | | | | | 685 | | | |
| Ala | Ala | His | Cys | Lys | Glu | Tyr | Lys | Asn | Leu | Asn | Ser | Phe | Phe | Ala | Ile |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Val | Met | Gly | Leu | Ser | Asn | Ile | Ala | Val | Ser | Arg | Leu | Ala | Leu | Thr | Trp |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Glu | Lys | Leu | Pro | Ser | Lys | Phe | Lys | Lys | Phe | Tyr | Ala | Glu | Phe | Glu | Ser |
| | | | | 725 | | | | | 730 | | | | | 735 | |
| Leu | Met | Asp | Pro | Ser | Arg | Asn | His | Arg | Ala | Tyr | Arg | Leu | Thr | Val | Ala |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Lys | Leu | Glu | Pro | Pro | Leu | Ile | Pro | Phe | Met | Pro | Leu | Leu | Ile | Lys | Asp |
| | | 755 | | | | | 760 | | | | | 765 | | | |
| Met | Thr | Phe | Thr | His | Glu | Gly | Asn | Lys | Thr | Phe | Ile | Asp | Asn | Leu | Val |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Asn | Phe | Glu | Lys | Met | Arg | Met | Ile | Ala | Asn | Thr | Ala | Arg | Thr | Val | Arg |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Tyr | Tyr | Arg | Ser | Gln | Pro | Phe | Asn | Pro | Asp | Ala | Ala | Gln | Ala | Asn | Lys |
| | | | | 805 | | | | | 810 | | | | | 815 | |
| Asn | His | Gln | Asp | Val | Arg | Ser | Tyr | Val | Arg | Gln | Leu | Asn | Val | Ile | Asp |

825

830

Asn Gln Arg Thr Leu Ser Gln Met Ser His Arg Leu Glu Pro Arg Arg
835 840 845

Pro